



THE MAGAZINE FOR CIOs IN EXECUTIVES

FIRST OF TWO SECTIONS

MAY 15, 1998

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ALSO INSIDE

Hiring Foreign Workers

PAGE 32

Turbo-Charge Your Help Desk

PAGE 40

DATA MINING

Captains of Commerce

How fortunes are made on the high seas of customer information

PAGE 50

Senior VP Randall Grossman
plumbs the depths of customer
data at Boston's Fleet Bank

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Features

40 Help on Help

END USER SUPPORT Does your help desk do more than respond to crises? If not, it's opportunity lost. Leading groups use their insight into users' problems to influence the entire application life cycle.

By Ruth Greenberg

50 Advanced Navigation

COVER STORY: DATA MINING

Marketing secrets from the financial sector show how data mining charts a profitable course to customer management.

By Peter Fabris

58 Where Are They Now?

STRATEGIC SYSTEMS REVISITED When it comes to major strategic implementations, it's one thing to lift off and another to make the right moves once you're in orbit. Here's an update of three strategic launches on which CIO has reported in the past.

By David Pearson



ON THE COVER:

Randall Grossman,
a senior VP at Fleet Bank,
uses data mining to study
the needs and habits of
customer groups.

Cover photo by Webb Chappell



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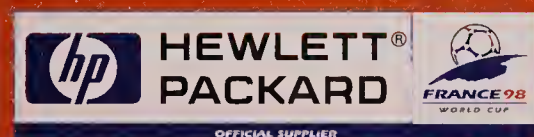
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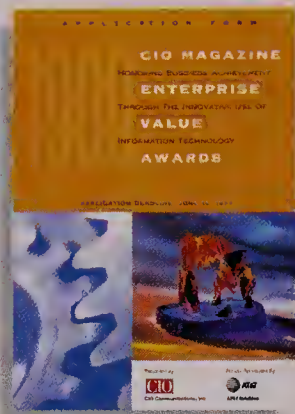
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Enterprise Value
Awards application
follows Page 82.



Columns

32 Foreign Entanglements

EXECUTIVE COUNSEL If you can't solve your staffing crisis at home, should you try turning your attention overseas?

By Mindy Blodgett

68 English Queries Only

EMERGING TECHNOLOGY What to do when the natives don't speak SQL.

By Bill Roberts

Capital Ideas • Portable Unix • Better reports •
Web calls • Measuring uptime

76 Good Help

META VIEW Help desks can cut costs and enhance productivity. Is yours meeting the mark?

By Jeff Rumburg

84 Advanced Micro Devices' Web-Based Purchasing System

WORKING SMART This company turned to automation to squeeze out the paper-pushing handoffs inherent in the purchasing process.

By Megan Santosus

In Every Issue

12 In Box

Letter from the editor, reader feedback and how to reach us

• New on our Web Site

16 Publisher's Note

20 Trendlines

Say Cheese, Broccoli • Help for the Good Guys • Off the Shelf • Who's Buying Whom? • Getting Touchy-Feely • Life in the Fast Lane

80 Portfolio

82 Index

68



Inside Section 2

COVER STORY: MANAGING I.T. As the IT function becomes more critical to business success, so does the job of overseeing it.

BILLING STRATEGIES With convergent billing, companies are finding ways to transform invoices into featured attractions.

YEAR 2000 AND THE ECONOMY Could the Y2K bug drag the economy into a recession? Or are its potential deleterious effects overblown?

BOOK EXCERPT: UNLEASHING THE KILLER APPLICATION Your company's value chain is imperiled by killer applications. Find out how to stay competitive.

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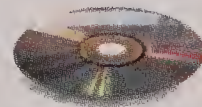
So, what are you

running on these days?



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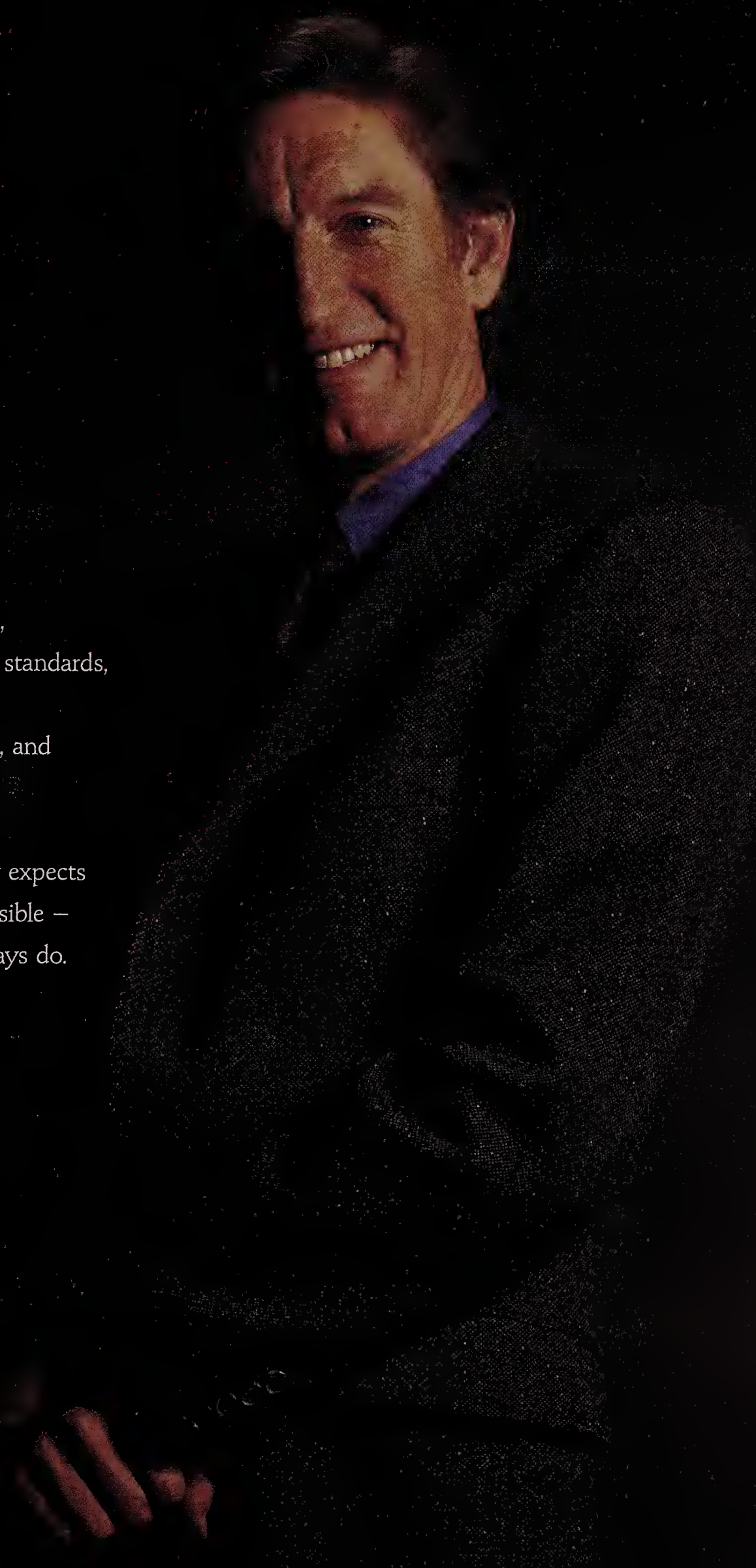
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In Box

LETTER FROM THE EDITOR, READER FEEDBACK
AND HOW TO REACH US

A lot goes into creating value-adding information systems: money, time, reputations. But what is the key success factor?

More and more, I believe it is commitment. You can be as smart as Einstein, follow all the steps, buy the right technology, get buy-in from all the right people. But these things may not be enough.

The reality of large-scale systems implementation is very different from what the stories generally show. Users are powerful, and they may not like what you're doing. Change is annoying at best; it is often threatening, especially when it involves sharing things, like information, that are at the core of individuals' own value to the organization. No one can afford to rest easy, having followed the prescribed recipe for success.

If you listen to consultants, academics and yes, the press, business can seem abstracted, even formulaic. As much as I dislike the current trend to glorify business endeavors as something revolutionary and profound, some amazing things are happening on the front lines. Business is life, and life is blood and guts. Individuals attempting Big Things encounter political scheming and naiveté,

self-interest and charity, fear and enthusiasm. The end game hasn't changed; we've just got some (amazing) new tools to do the same things we've always done: make more money, build empires, destroy our enemies, make sure we leave the game with more marbles than the other guy. But because this is a time of profound change, there are examples of heroics to be found.

When Bob Hiebeler encountered user resistance to Arthur Andersen's Global Best Practices knowledge base, he might have been justified in admitting defeat. Clearly, consultants had too much at stake to ever voluntarily share their information or deign to use knowledge supplied by others. Besides, such a system, if taken to its logical conclusion, might actually compete with the consultants themselves. Why would clients pay for all those billable hours if they could access the same experience and expertise through packaged content?

What could one man do against such truths? What was his secret?

Hiebeler didn't give up, and he didn't tick people off. He stayed committed to his project and, through perseverance and persuasion, kept his vision alive until others could see it too. He politicked and communicated. He schmoozed. Without Hiebeler, according to industry observers, chances are, the system would have foundered two years ago.

To stand firm in the face of opposition is heroic. While it may not carry the moral weight of someone standing up in the face of political or military oppression, it takes the same basic qualities. We're all required to demonstrate such leadership on some level, and we need all the role models we can get. Would you like to see more on leadership in the pages of *CIO*? Send me an e-mail.

Abbie Lundberg

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LAWRENCE A. WEINBACH
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Dear Friend of Unisys:

Unisys financial results have been improving steadily. Much of this improvement is due to our intense focus on providing solutions for the information services and enterprise-class server markets. And today, our customers and prospective clients do not question our viability, but are more interested in the technology solutions we have to offer.

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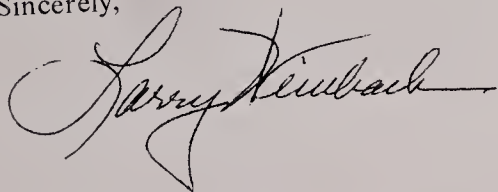
Without question, the industry has renewed confidence in Unisys.

Furthermore, our partnerships with technology leaders Intel, Microsoft, Oracle, BEA, and Computer Associates reaffirm our skill in enterprise-class computing and open systems. And our partnerships with Independent Software Vendors and system integrators have enabled us to offer enterprise-class solutions to the growing Windows NT market.

I know I'm not the only person who believes Unisys has turned a corner. It's a belief that's shared on Wall Street, in the media, and most importantly, by our customers and employees.

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Sincerely,



Lawrence A. Weinbach
Chairman, President & Chief Executive Officer

In Box

SIZE MATTERS

Thank you for finally acknowledging that not every company has an army of IS staff and a megabucks budget. In her Executive Counsel column ["Trying It On For Size," *CIO* Section 1, Feb. 15, 1998], Danielle Anderson makes some valid and timely points. After many years reading your magazine and managing very small IS shops, I am glad to see this concept starting to see the light of day.

Three times now I have "introduced" companies to information technology and built IS departments from the ground up. In 25 years in IS, I have never been in a shop with more than eight people. It is a whole different world down here at the bottom, but I believe there are lessons well worth teaching. Especially about wearing many hats and doing amazing things on a microscopic budget. Especially where every action brings instant visibility of the benefits to the company.

I am now, once again, a one-man IS shop. In a typical day I will meet as part of the executive management group, fix a couple of PCs, do systems management on our AS/400, train people on Excel or Word, track down a network problem, update our Web site and maybe, if time permits, do a little programming on a new system I have designed.

I am in touch with the business and know that what I do now will help this

company for many years to come. Maybe later this year I will start building an IS staff. Even without the title, I am as much a chief information officer (and maybe more) as most of your readers. If it involves information technology, I'm "it" around here.

Please try to work in a few more articles pertinent to the very small IS shop. Topics like explaining to a computer-phobic business owner why buying one PC this month will make his business stronger. Or like balancing IT strategy with constant interruptions to fight fires. And especially priority brokering to manage this scarce resource.

Todd Caughey

MIS Manager

Harvey Vogel Manufacturing Co.

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THE NAME GAME

[In his Dec. 15, 1997/Jan. 1, 1998, publisher's letter,] Gary Beach says, "The key role of the CIO is to build the infrastructure so that companies can truly achieve the most reliable information, anywhere, at any time."

This seems to illustrate the fairly well-entrenched idea that infrastructure needs are met specifically by a CIO and information needs are vaguely fulfilled somewhere by an unnamed someone in the company.

If a senior company executive said, "My mission is to improve the performance of this company by putting information to work for us and our customers in ways that satisfy all their requirements," what do you think this person's title would be and why? I suggest chief systems officer (CSO) is a more accurate title for this function. Might you entertain the notion of changing your outstanding periodical's name to CSO: The Magazine for Information Systems Executives, so that the chief information officer concept can again be discernible?

David Block

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Technology Engineer

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Publisher's Note

OK, so Dennis Jones, CIO at Federal Express, didn't choose a network computer (NC) architecture to replace 30,000 of the 70,000 terminals networked to the company's mainframes.

General business publications jumped all over this story with a rash of network-computers-are-dead stories, doing disservice to how NC technology can dramatically change the way corporations leverage information.

The Wall Street Journal claimed several weeks ago that an exchange at the September 1995 International Data Corp.

European IT Forum in Paris sparked the genesis of the NC debate. That is simply not so.

Larry Ellison commented, "The PC is a ridiculous device." Bill Gates followed with a passionate counter for the merits of the "PC success loop." But it was Ellison's lead-in to this comment that raised the NC idea to a new level of global awareness.

He said, "The mainframe is not dead; it is just not at the center of the universe. The PC is not dead; it is just not at the center of the universe. At the center of the universe is the network, and the PC is a ridiculous device [to use to access information in this model]."

No one in the audience said anything.

Yet Ellison's insight to tweak Sun Microsystems Inc.'s trademark slogan, "the network is the computer," with an exclusionary focus on the "network" did indeed change the dynamics of our business. In the nearly three years since that conference, the global IT industry has allowed the NC debate to denigrate into a tactical discussion about access devices and hybrid software applications. The real network computer debate is far more strategic.

And user-centric. This debate is about how users will generate, store and access information. It's about this simple question: Will corporations ever view information as a utility?

Utilities have operated historically on a centralized distribution model. You don't have an electric power generation station in your backyard. You just pull power down the line and are charged for usage. Moreover, in this model, the user pays for but doesn't necessarily worry about maintaining, upgrading or securing the system. Utility companies do that for you.

In an information utility model, strategic emphasis is placed on centralized information storage, network bandwidth deployment, user access and security. The real question in the NC debate is this: Will CIOs lead corporate America to an information utility model?

What do you think? Is the network computer debate about devices or about moving the entire IT industry to a utility model? Send me an e-mail.



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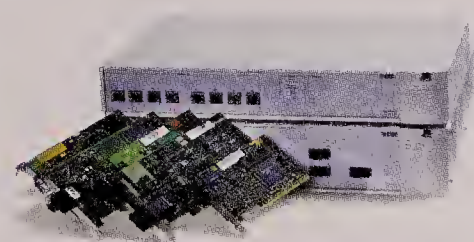
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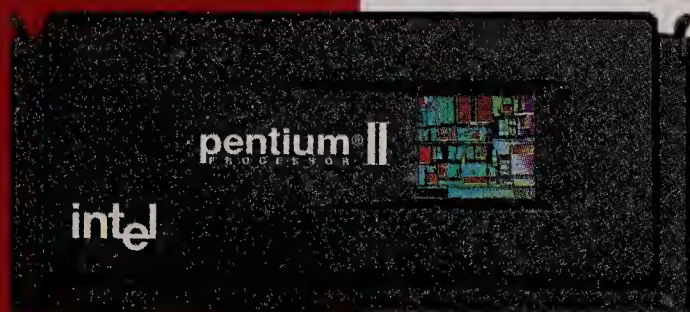
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Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Katherine Auer

Say Cheese, Broccoli

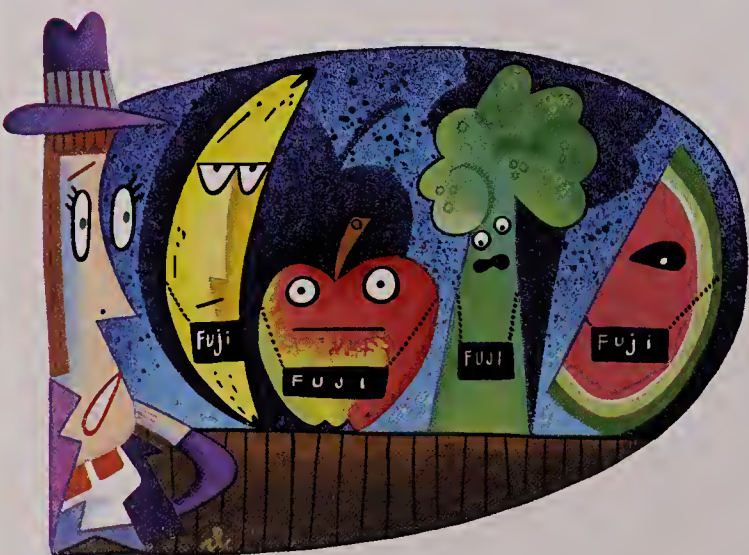
GROCERY STORE I.T. Is that parsley or cilantro? Fuji apple or Braeburn? You've probably noticed that grocery store checkout clerks are sometimes less than 100 percent accurate when identifying the myriad types of produce that make their way to the registers. In fact, in many grocery stores, as much as 10 percent of produce items are mistaken for other varieties at the register—costing either stores or customers a bundle.

"The problem is that produce cannot be scanned by laser bar code scanners," explains Michael S. Miller, a technology scientist at NCR Corp.'s Human Interface Technology Center in Atlanta.

Today, a new system developed by NCR is helping grocery stores reduce such errors. Called Apricot (Advanced Produce Interactive Cashier Offline Training), the system allows store cashiers to learn to identify dozens of varieties of fruits and vegetables with as much as 98 percent accuracy, NCR claims. Apricot, which works on PCs running Windows 95, takes trainees through exercises that combine digital pictures, video and sound to acquaint them with the produce they are likely to see most often. A library feature takes them on a virtual tour of produce items, offering background information and repeating the items' names. A speech recognition component asks the trainee to identify items by name, and a review section puts trainees in a check-out counter simulation, showing them product pictures in rapid succession and requiring them to ring up each item.

The trained cashier then carts that knowledge to the register and provides better customer service with fewer mistakes. In grocery

stores, where the turnover rate is high and employee motivation is often low, Apricot might just result in happier employees and customers. So if you think the idea of having your navel oranges strike a pose sounds fruity, think again. ■



Help for the Good Guys

CRIME STOPPERS In the law enforcement world of the future, O.J. Simpson might not elude officers on the Los Angeles freeway. Instead of suffering worldwide indignity for the several hours they patiently trailed Simpson's vehicle, technologically advanced L.A.P.D. officers might have been able to send an electrical pulse that would have caused the infamous white Ford Bronco to roll to a quiet and obedient standstill.

Jaycor, a San Diego-based company that develops technology for government and industrial clients, is currently at work on a device for just such occasions. Engineers at Jaycor's Electromagnetic Applications Division, based in Colorado Springs, Colo., are perfecting Auto-Arrestor, which is designed to stop speeding vehicles and the criminals who flee in them by using a pulse of electrical current to disrupt the operations of a running automobile. A car that has been zapped by Auto-Arrestor rolls to a stop, much like a car that has run out of gas, and cannot be restarted until the damaged parts of the electrical system have been replaced.

Work on Auto-Arrestor began when Jaycor engineers asked law enforcement officials for areas in

ILLUSTRATION LEFT BY ROBERT DE MICHELL; ILLUSTRATION RIGHT BY ANDREW SHACHAT

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THE PINK SLIP AND

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THE DOOR HIT IT ON THE WAY OUT

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Trendlines

which they could apply their technological expertise.

"Unanimously they said fleeing automobiles and car chases," says Blair Stewart, manager of Jaycor's Electromagnetic Applications Division. Jaycor's hope is that once Auto-Arrestor is fully developed and widely available, it can help decrease the number of messy ends to high-speed car chases, which endanger not only officers and speeders but also innocent bystanders. One possible use is for officials at border patrols. "Customs and border control people have a horrendous problem with 'bolters.' They're desperate for an alternative," says Stewart.

Engineers at Scientific Applications and Research Associates Inc. (SARA), a research company in Huntington Beach, Calif., that finds commercial uses for high-technology and is working with the Department of Defense to develop technology for nonlethal warfare, may soon add ammunition to the high-tech crime-fighting arena as well. "Law enforcement in general is very frustrated with the options they have when conflict escalates," says Parviz Parhami, SARA's CEO, who says his company is working on acoustic devices that emit bursts of sound waves. Police could use such a device to annoy, confuse or scare people, forcing a weaponless surrender.

Jaycor's development of Auto-Arrestor has been stymied by lack of funds, and much of SARA's potential crime-fighting technology remains in the research and development phase. But Stewart has no doubt that if Jaycor and other companies manage to build it, they will come—and they will bring their wallets. He says, "I get calls every day from law enforcement people who ask, 'Where can I buy one?'" —Meg Mitchell

Off the Shelf

The Right Connections

Sense & Respond: Capturing Value in the Network Era

*Edited by Stephen P. Bradley and Richard L. Nolan
Harvard Business School Press, 1998, \$45*

THE DAWNING OF THE INFORMATION AGE has rendered many ways of doing business obsolete. If the traditional model has been "plan, build, ship," the mantra of the network era is "sense, respond, think." It's no longer enough to build and sell a product. Today, successful businesses must sense the needs of their target consumers, respond to those needs with appropriate products or services and then think about ways to better satisfy consumers' needs. In some cases, it may be necessary for companies to reshape their offerings. But regardless of the particular steps a given company takes, what allows it all to happen is the interactivity between buyers and sellers that networking makes possible.

So argue editors Stephen Bradley and Richard Nolan, as well as the many other authors whose thoughts fill the pages of *Sense & Respond: Capturing Value in the Network Era*. Each of the book's 14 essays examines a different aspect of today's networked business environment, but they all deliver a similar message: A successful business must weave interactivity into every process.

The book's contributors, a variety of university professors, company executives and business analysts, including the collection's editors, explore how networking technology dissolves the boundaries that have long stood between buyers and sellers. The essays in the first of the book's four parts, "Creating and Capturing Value," describe how companies have used their electronic connections to customers to sense and respond to customer needs and how new technologies such as the World Wide Web are making even more interactivity possible and profitable. The next sections, "Sensing the Customer" and "Responding with Capabilities," explore the ways in which companies connect with customers and develop channels to respond to their needs. The final set of essays, "Transforming the Organization," discusses the business world's shift to such network-enabled concepts as virtual offices, teams, factories, markets and stores. Many of the essays in each section include real-life case studies.

In her essay, "Delivering Customer Value Through the World Wide Web," for example, business analyst Kathy Biro finds a successful business—L.L. Bean—that has overcome all of the obstacles associated with new media ventures. Bean's trailblazing interface, backed by rigorously enforced editorial guidelines and secure networks, lets the business build a virtual store that can be intuitive for users and profitable for L.L. Bean.

Sense & Respond offers useful, interesting advice for companies of all shapes and sizes and can be a source of particular inspiration for those planning major changes. For businesses that are planning ahead, *Sense & Respond* is an educational look into the future, and it's a warning to those that are behind the curve.

—Ruth Greenberg

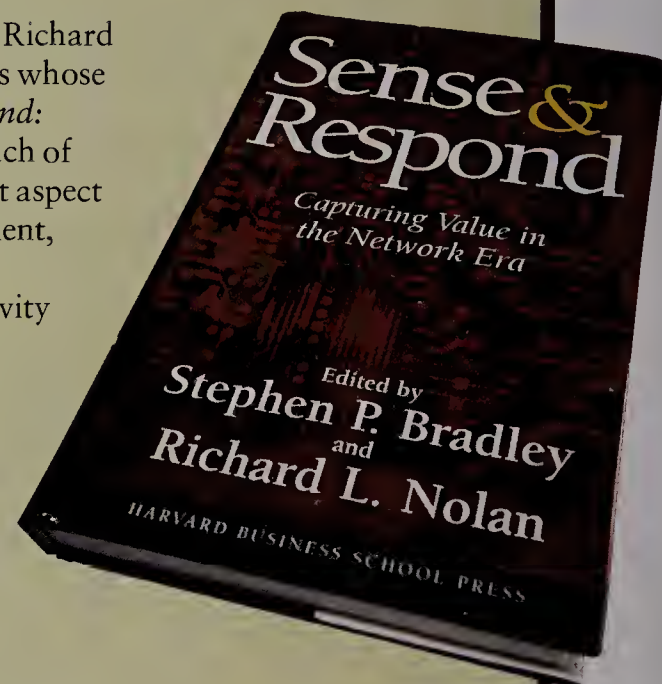
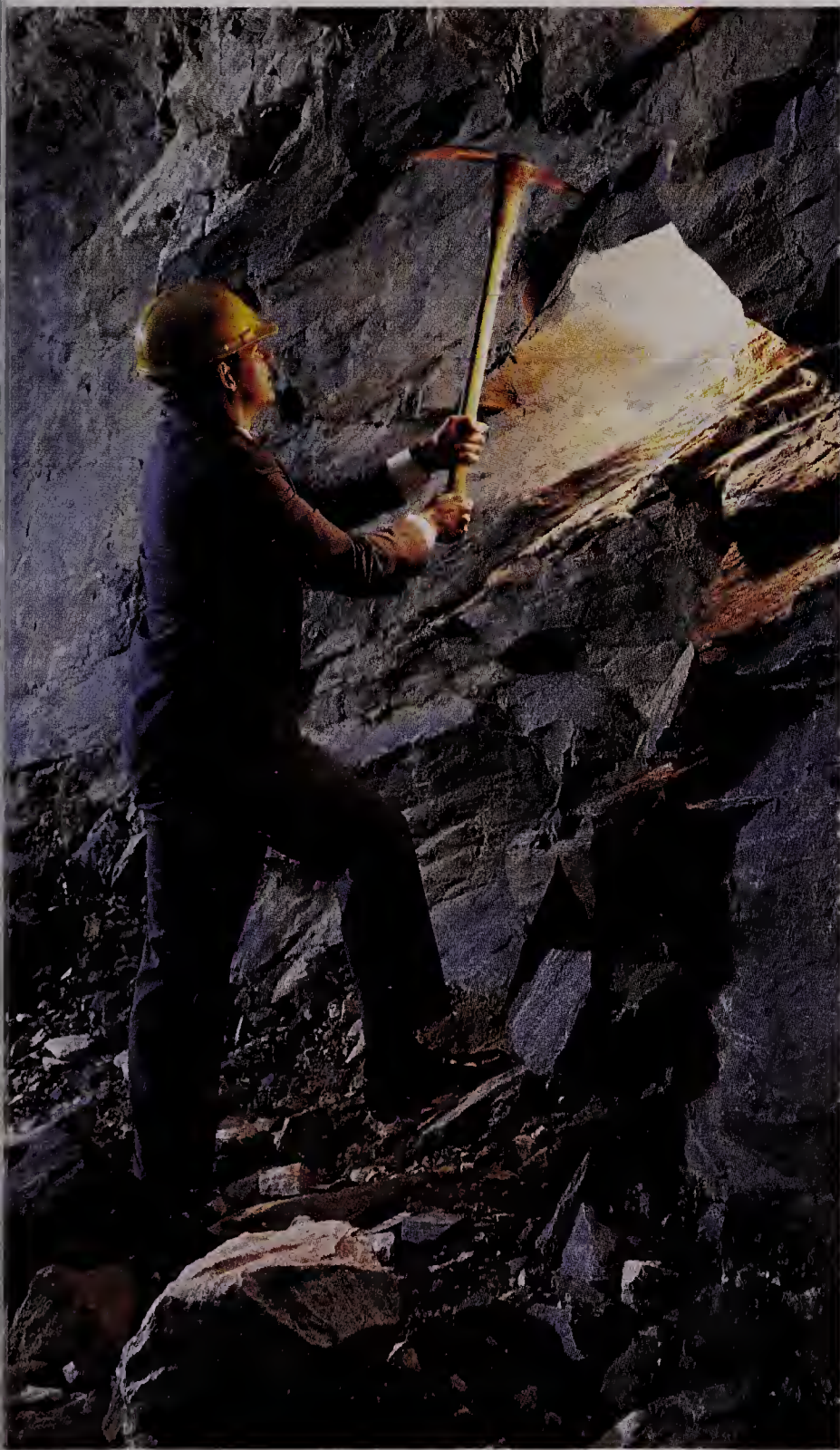


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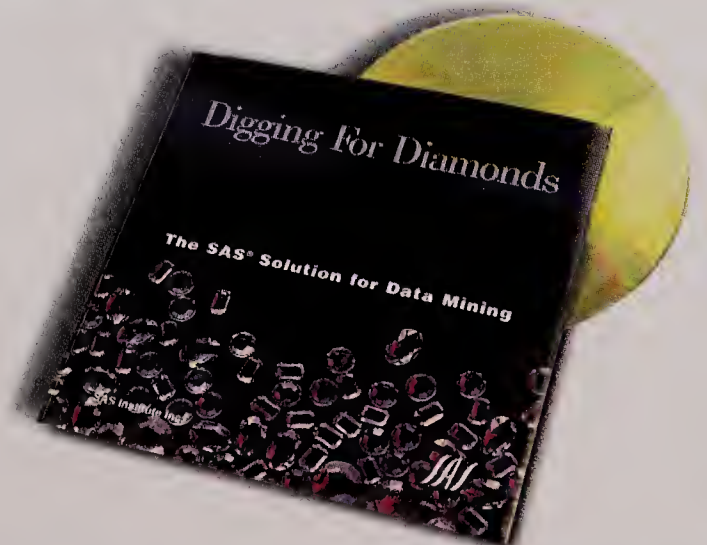
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Who's Buying Whom?

HEADLINE PREDICTIONS Want to know what IT mergers and acquisitions we can expect to see this year? Below, analysts at Directions '98, a recent conference hosted by International Data Corp. (one of CIO's sister companies), weigh in with their predictions for the M&A headlines that might appear during 1998 and beyond. Some predictions, of course, were tongue-in-cheek, but you never know....

Company A Buys	Company B	In Order to...
Compaq	Cabletron	finish what the Digital deal started
NTT	Sprint	get into the American telecom market
NEC	AMD	get into the Intel chip market
AOL	Netscape's Netcenter Web site	get even more eyeballs on the Web
Netscape	Kenneth Starr	continue the independent investigation of Microsoft
Microsoft	Department of Justice	stop the independent investigation of Microsoft
WorldCom	EDS	continue its buying binge
Oracle	Netscape	increase its Internet mind-share
Sun	Netscape	focus more on software
Sun	Unisys	get back share rank lost in Compaq/Digital deal
Intel	Sun's Sparc division	further consolidate the midrange market
IBM	Sun	take on Microsoft
SCO	Sun's Sunsoft division	finally consolidate all versions of Unix for the PC

THE ANALYSTS also suggested four reliable headlines that newspapers could set and leave for inevitable use in the future:

“Windows Delayed”

“Government Revises Y2K Estimates”

“Internet Collapses By Year End”

“Microsoft Accused; Bill Gates Denies”

—Howard Baldwin

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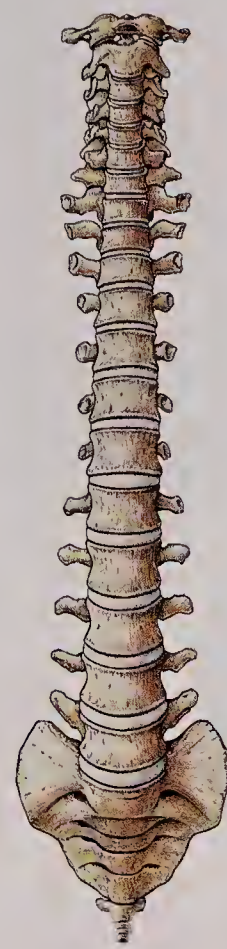
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Getting Touchy-Feely

MOUSE TECHNOLOGY Imagine dragging an icon across your computer screen and feeling physical resistance between it and the desktop below; when you drop the icon into a folder, you feel a distinct pop. Imagine stretching a window onscreen and feeling elasticity. Sound like something from a sophisticated computer game? Think again. New mouse technology adds the sense of touch to interacting with a PC.

Using technology developed by Immersion Corp. of San Jose, Calif., for joysticks and steering wheels used in computer games, the Feelit Mouse conveys tactile sensations as users manipulate the cursor on a graphical user interface. When the user moves the mouse to control the cursor, the mouse pushes back to simulate physical encounters with objects on the screen. So when the user moves the cursor into a graphical barrier, for example, the mouse pushes back to prevent penetration. Because the mouse prevents the cursor from moving beyond the barrier, it feels to the user as if the graphical barrier is physically real. In addition to hard surfaces, the mouse can simulate springs, liquids, textures, vibrations and other sensations. According to Immersion, the mouse can enhance computing in virtually any context, including word processing, graphic design, surfing the Internet and engineering applications.

The Feelit mouse comes attached to its mouse pad, which contains an electromechanical mechanism that creates the tactile sensations. The mouse also contains its own local processor to perform the stream of rapid calculations each sensation requires.

The result? According to Immersion, the addition of touch produces a richer computing environment and can result in dramatic increases in user performance speeds.

The Feelit Mouse is scheduled to ship late this year. Its retail price will be about \$139. For more information, call 408 467-1900 or visit www.force-feedback.com/feelit/feelit.html or www.immerse.com. ■



Life in the Fast Lane

INTERNET TRAFFIC It's near the end of the day, and you're getting ready to go home. Before heading out, you listen to the local traffic report on your favorite radio station. Thanks to what you learn there, you avoid sitting in traffic as a major accident is cleared from your usual route.

Back at work the next day, you're getting ready to download a big file from an Internet site. Wouldn't it be nice to know what the "traffic" level is like on the Internet so that you could know about how long it would take? If things looked really bad, you could even postpone your plan.

The Internet Traffic Report (www.internettrafficreport.com) can provide you with just such information. According to Acton, Mass.-based Andover Advanced Technologies Inc., which runs the Andover.Net site where it appears, the Internet Traffic Report collects hourly data on package loss and response times from routers around the world to provide an independent, real-time measure of how well traffic is moving on the Internet—city by city, country by country and for the Internet as a whole.

Of course, it's one thing to report automobile traffic, and quite another to report on packets of information flying across the world. A recent story on the Wired News Web site reported that some experts question the valid-

ity of the metrics such services use. Wrote Wired News, "Unfortunately, the complexity and cost of accurately gauging the speed, volume and choke points of the world's Internet traffic may be prohibitive—if it's possible at all—given that much of the crucial data is proprietary." ■

ILLUSTRATION BY ANDREW SHACHAT

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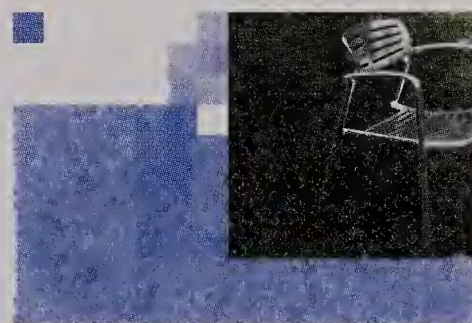
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Foreign Entanglements

If you can't solve your staffing crisis at home, should you try turning your attention overseas?

BY MINDY BLODGETT

YOU NEED AN I.T. WORKER with a background in SAP. After exhausting the typical recruiting avenues and coming up empty, you finally find an employee with lots of experience and great credentials. Problem is, this person doesn't have a driver's license, speaks only mediocre English and may need more orientation or social support than you're used to providing. Such is the challenge you might face when you look to import foreign

workers to solve your domestic IS staffing woes.

And increasingly, companies are solving—or at least easing—their staffing shortages by looking abroad for the workers and the expertise they need. We aren't talking about companies shifting their operations overseas—though some are doing that, too—but those that are importing foreign-born talent to meet unfulfilled IT or programming needs. While most CIOs say their first preference is to

“buy American,” they also note that foreign workers are often highly qualified, well educated and bring loyalty and a strong work ethic to their U.S.-based jobs.

Importing foreign talent is still a relatively uncommon strategy, according to a December 1997 survey of 1,493 companies conducted by the Arlington, Va.-based Information Technology Association of America (ITAA). About 40 percent of those surveyed currently employ foreign workers. But the ITAA says the dearth of qualified American IT employees is making hiring foreign workers an increasingly popular practice. For those companies that import skilled immigrants as an antidote to the staffing crisis, there are both challenges and rewards.

Culture Club

Mike Baldwin, president and CEO of Virtual Solutions Inc., an IT consulting and applications development firm based in Irving, Texas, says he had no choice but to turn to foreign workers about four years ago, when his statewide search for IT staff skilled in data modeling, data warehousing and database development proved futile. Baldwin had followed the usual recruiting routes—paying for want ads and hiring headhunters—but he says the staffing crisis severely limited the pool of available workers. He had no idea what to expect of foreign labor, but he felt he had to give the international market a try.

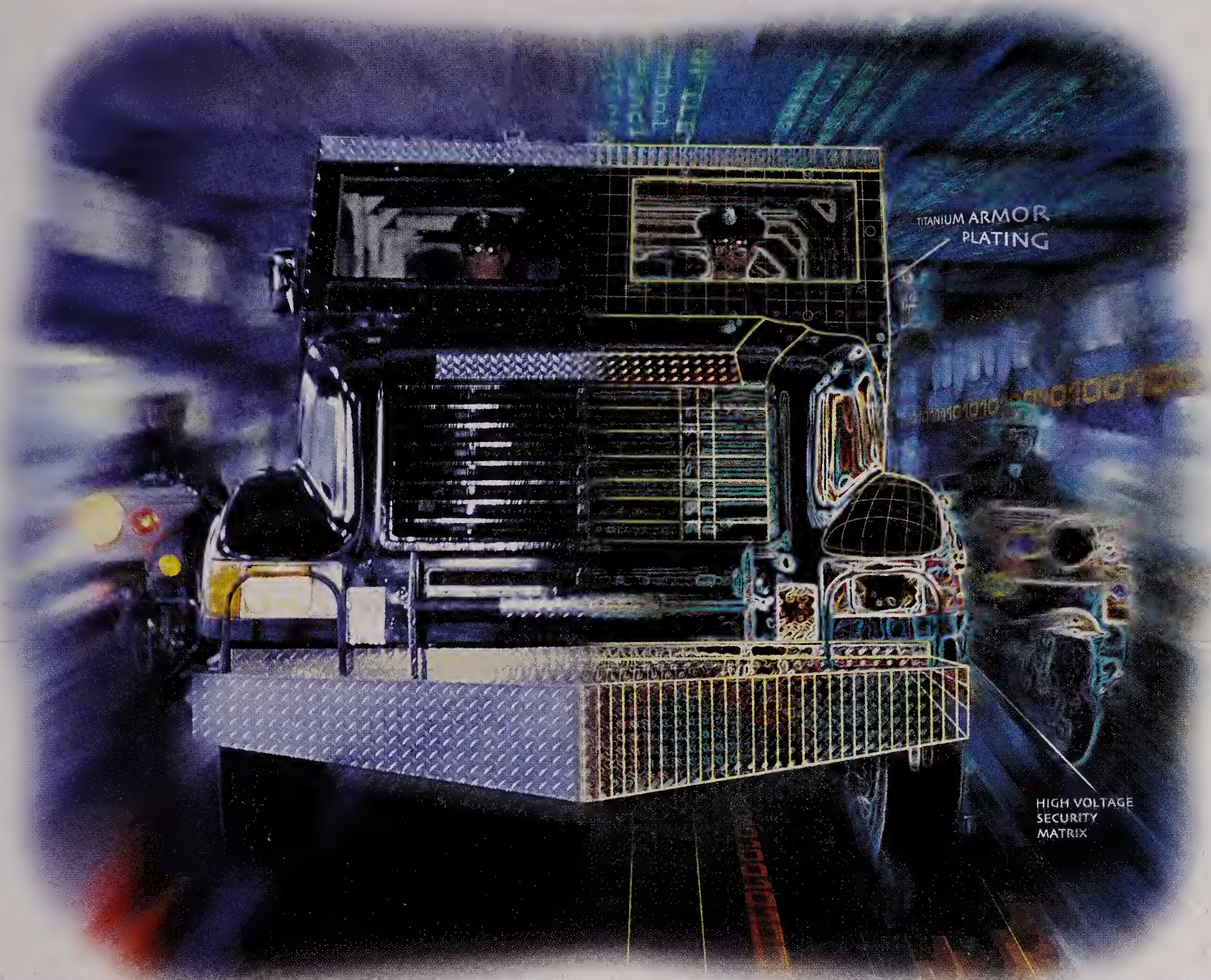
Now, about 30 percent of the company's 115 employees are from outside the United States, Baldwin says. These workers are on both the internal IT crew as well as the consulting and programming staffs that work with clients. Most are from the United Kingdom and India, Baldwin says, and a few are from China. The balance of domestic and foreign employees works, but it took some effort and careful planning.



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Executive Counsel

"The issues are many," Baldwin says. "There can be cultural problems. We have hired people who don't have driver's licenses—who have never driven a car. [Workers] often have to drive to remote engagements. So we have to pay for driver's education courses. Then we have to help them find adequate housing, schools for their children. We end up providing more services than we might for a U.S. citizen."

Baldwin says good English skills are imperative for successful foreign candidates, "but sometimes they don't understand regional differences, or they don't speak clearly, so we pay for diction classes."

Baldwin notes that it is important to hire legal help experienced with immi-

gration issues to help with paperwork and complicated visa laws. And he says enlisting employment companies well

employment and education histories and investigating documentation. Attorney Sandra Levitt of Levitt and

While most CIOs say their first preference is to "buy American," they also note that foreign workers are often highly qualified, well educated and bring loyalty and a strong work ethic to their U.S.-based jobs.

versed in recruiting foreign workers saved his company the time and money involved in conducting employee searches. Virtual Solutions hired Computer People Inc. of Dallas to conduct its overseas recruiting and to vet new employees, checking their

Needleman PC in New York City helps the company maneuver the candidates through the temporary work visa process.

Once a new recruit is on board, Baldwin says, the company links that person with a mentor, preferably from the new employee's own ethnic background, to act as a guide. The mentors help foreign workers get accustomed to the new company as well as to the new country, providing information about transportation, good restaurants and places of worship.

Baldwin says devoting so much attention to the needs of foreign employees has paid off. Only once in the past few years did a recruit return home shortly after arriving. "He was a good employee, but he underestimated the homesickness he would feel," Baldwin says. Apart from filling vacancies, hiring foreign workers has some inherent advantages, he adds. "They tend to bring loyalty with them if you treat them well and pay them well," Baldwin says. "They are not as apt as Americans to jump from company to company. So far, hiring foreign workers has worked well enough for us to keep it up."

Testing Foreign Waters

Virtual Solutions' careful approach to hiring foreign workers and shepherding them through their work and personal lives is an example of how companies can ensure that skilled immigrants adapt well to the U.S. corporate culture. Foreign workers—because they've packed up and moved to a new country—are often extra-motivated to succeed, but companies still must make additional efforts to ensure their success, says Bruce Stewart, a vice president in Gartner Group Inc.'s technology management practice in Stamford, Conn. "But how much effort

Making the Case for Foreign Relations

Like the Founding Fathers, some naysayers are wary of "entangling alliances"

EARLY IN THIS NATION'S HISTORY, both George Washington and Thomas Jefferson warned the United States about getting ensnared in foreign alliances. It's safe to say, more than 200 years later, that some naysayers share their sentiment in regard to importing foreign IT labor. Former Secretary of Labor Robert Reich has criticized the importation of foreign workers to fill U.S. jobs, calling the practice a way to push U.S. workers out of good jobs to make room for cheaper foreign candidates.

The American Engineering Association has also said that some outsourcing companies hire foreign high-tech workers, then offer their services under contract to large companies. These foreign workers often work for less than the U.S. workers they replace, the AEA contends.

However, immigration lawyers such as Sandra Levitt of Levitt and Needleman PC in New York City dispute this contention, arguing that immigration law explicitly forbids undercutting the going market rate for employees and that companies doing so risk heavy fines. And Harris N. Miller, president of the Information Technology Association of America, denies that foreign IT workers are taking jobs away from the U.S. workforce. "I'm sure there were people on the Titanic who thought they were just hitting a little iceberg," says Miller. "The staff shortage is real. I challenge anyone who claims there are widespread abuses of foreign IT workers, that they make less than U.S. workers, to file a complaint with the Department of Labor, because it is against the law. It is to everybody's interest to expand the domestic IT workforce, but the demand is just growing too rapidly to satisfy the staff needs."

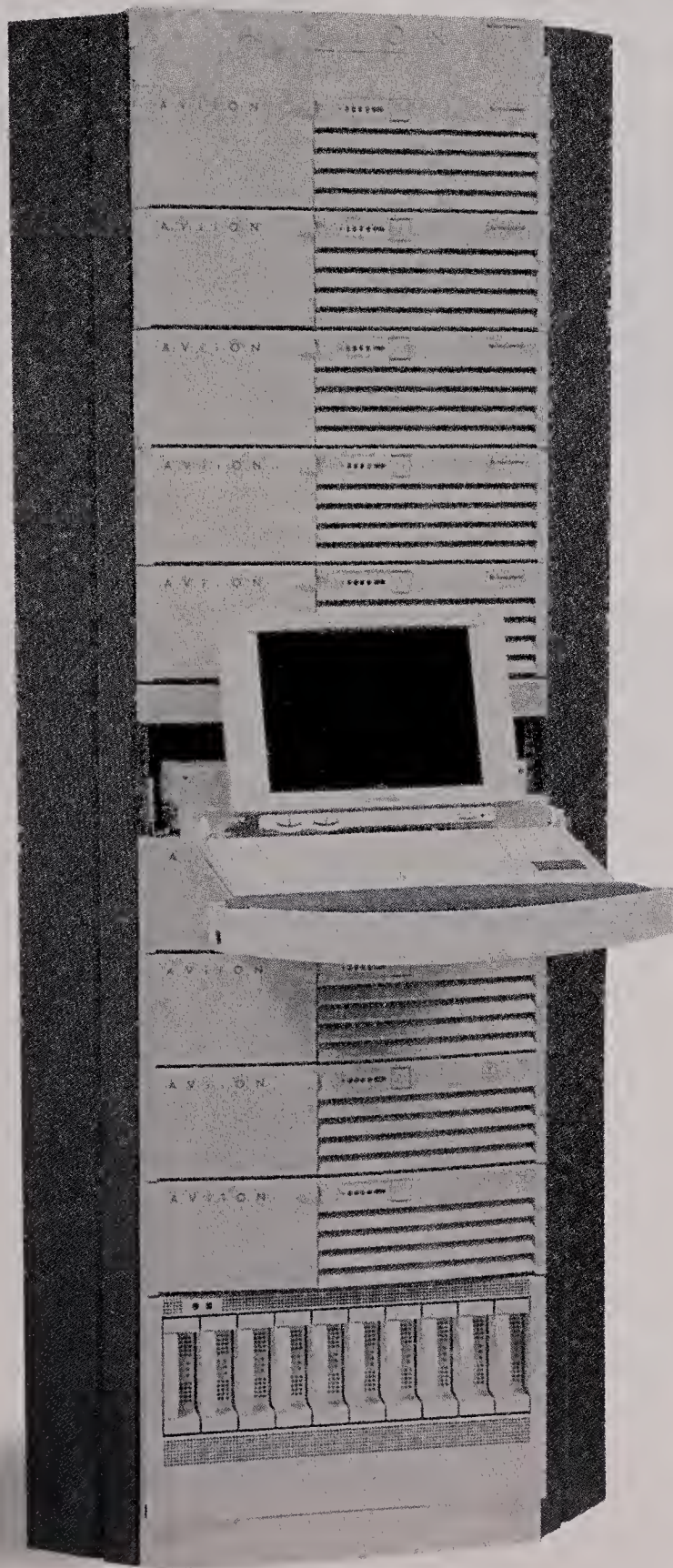
Miller also warns that if companies are not allowed to hire foreign workers, "then they just may ship the whole operation overseas, which hurts everyone."

—M. Blodgett



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Executive Counsel

you put into helping that employee depends on your corporate culture or the area of the country you are in," he says. "If you already have a very multicultural workforce and are based in California, where there is diversity, then you probably don't have to run a lot of unique programs aimed at the foreign employee. But if you live in a more homogenous community and your workforce is not very mixed, then you need to put more effort into it and be more paternalistic."

Internship programs can help ease foreign workers into a company's workforce. At Inacom Corp., a technology management services company based in Omaha, Neb., three Chinese interns recently joined the computer configuration staff (which assembles and networks computers) through an agreement with the Chinese government. The interns are highly skilled specialists, each with advanced degrees and field experience, who slowly but progressively are being introduced to the company's business and corporate culture. Inacom became involved in the program when executives were approached by a valued

Easing into the foreign market through an internship program was "a good way for us to see if hiring international talent would fit in with our way of doing business."

—Gary Steinberg

client who requested that the company sponsor some foreign interns. Gary Steinberg, who is director of the company's Los Angeles configuration center and manages the interns, says Inacom decided to participate to please the client as well as to open up a potential avenue for future recruiting, which may prove a useful antidote to staff shortages. Easing into the foreign market through an internship program was "a good way for us to see if hiring international talent would fit in with our way of doing

business," Steinberg says.

The Chinese interns first spent six months in on-the-job training at Inacom, getting started on the basics of systems configuration and integration. They were promoted to more advanced projects as they became acclimated to the world of American business.

Mentors help foreign workers get accustomed to the new company as well as to the new country, providing information about transportation, good restaurants and places of worship.

The company brought the interns along slowly, starting them off with basic duties, Steinberg says, because—while highly skilled—they lacked business experience and knowledge of the American modes of working with clients. The foreign internship program, which began in November 1997, is being assessed and, if deemed a success, will be expanded to include as many as 50 to 60 foreign employees, who will be placed in programs in all three of the company's configuration centers. Longer term, the company's plan is for foreign interns to be trained in other types of work.

The program's success will be judged on such factors as how well the interns pick up the company's business practices and get along with clients as well as how comfortable they are with American culture. "We think it could end up being a very good experience for the Chinese as well as for us because we certainly have a need for more skilled employees," Steinberg says. "But we wanted to go slowly. If the interns work out, then we would be looking at spending more money on them to bring them to the next level of being able to deal with customers." [Editor's note: As *CIO* went to press, Inacom reported that the Chinese interns have indeed worked out fine.]

Exchange Rates

Hiring foreign employees is not cheap. Companies can spend more than \$10,000 on training and orientation costs per foreign employee, according to Harris N. Miller, president of the ITAA. And, he adds, that doesn't include relo-

cation costs or money spent on attorneys hired to guide the company through the immigration process.

Companies shouldn't perceive hiring foreign workers as a way to get cheap labor, says Levitt, the immigration attorney used by Virtual Solutions. A federal law calls for skilled immi-

grants who enter the country on an H-1B temporary work visa to be paid the prevailing wage. Levitt, whose practice is limited to immigration law, says at least 50 percent of her time is spent working on visas for IT workers. The H-1B visas last for three years and can be renewed for another three years. Companies can also use special "telecommuting" visas, which allow Canadians and Mexicans to work from their homes and to travel to the offices of their American employers for short visits on a monthly basis.

In recent years, a controversy has sprung up around the 65,000 cap, set by Congress as part of the 1990 Immigration Reform Act, on the number of skilled immigrants allowed to enter the country annually. Last year this total, which includes workers from all sorts of professions, was reached for the first time in August. This year IT recruiters project the cap will be reached by June, and several Silicon Valley corporations, including Intel Corp., have been pushing Washington to expand or remove the limit.

For Virtual Solutions' Baldwin, the investment in time and money to recruit and integrate foreign workers into his staff has been worthwhile. Hiring foreign workers was a plan born of desperation, but Baldwin says the experience has enhanced his business. "These people bring different work ethics and methodologies that have broadened our own approach to technologies and added to our culture," he says. **CIO**

Senior Writer Mindy Blodgett can be reached at mblodgett@cio.com.

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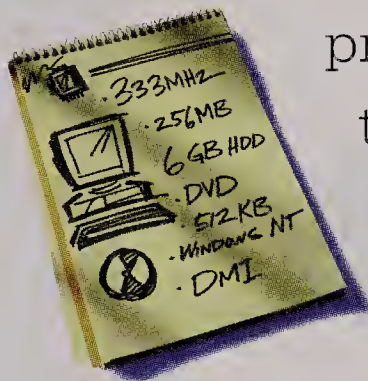
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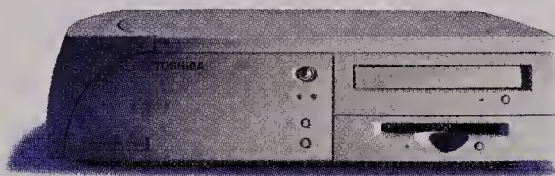
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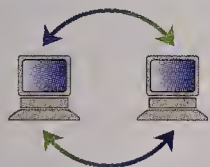
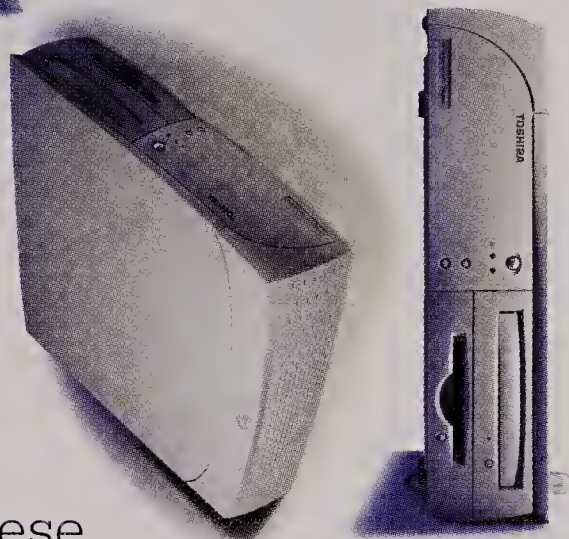


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In Touch with Tomorrow
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Help on Help

Does your help desk
do more than respond
to crises? If not, it's

opportunity lost. Leading groups use their insight into users' problems
to influence the entire application life cycle.

BY RUTH GREENBERG

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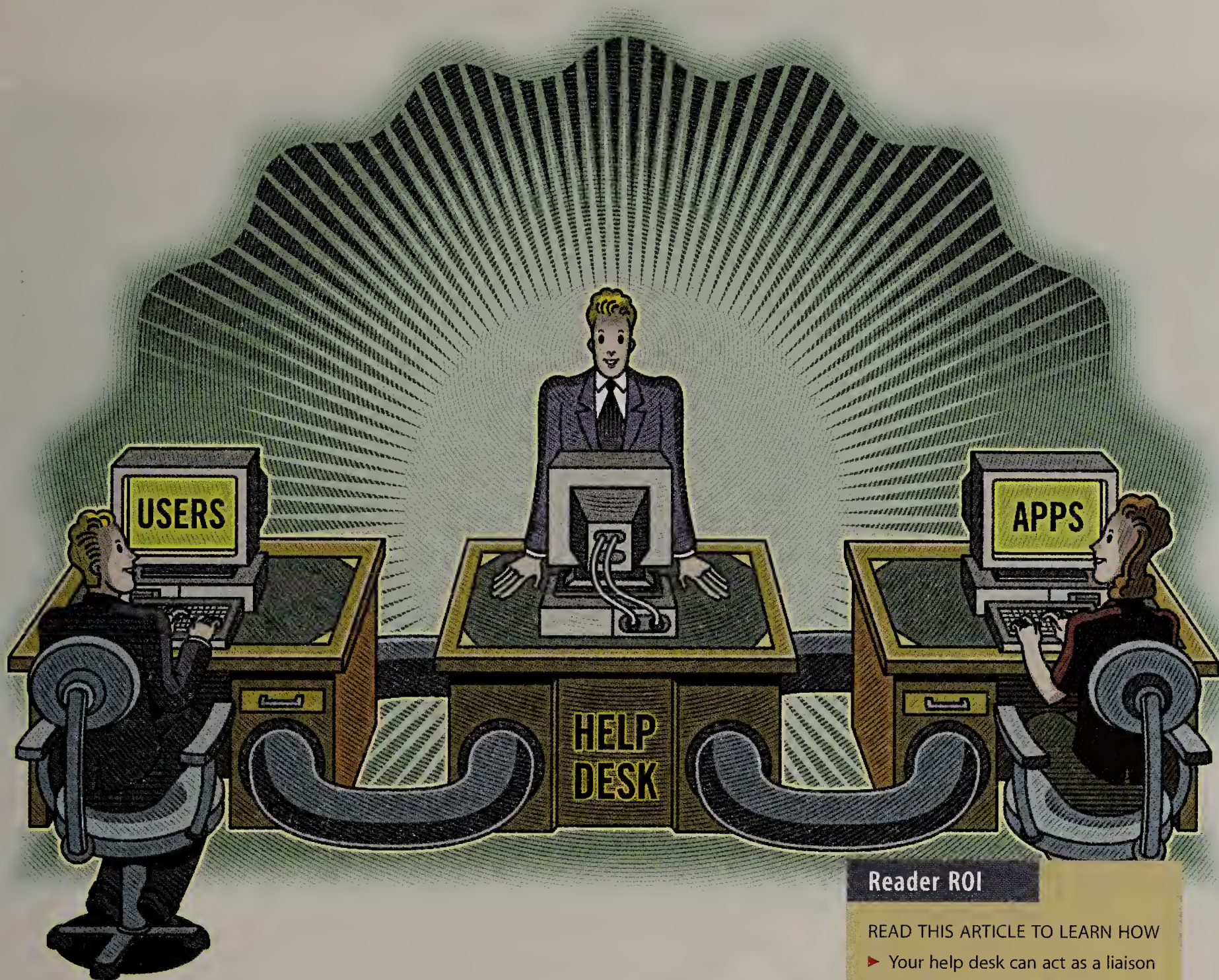
ANAGING A HELP DESK CAN BE LIKE running an emergency medical center. In a rough neighborhood. With no supplies. During an epidemic. For some time, help desk workers (and their bosses) have been surviv-

ing under these conditions, performing triage for some internal users, answering basic computing questions for others. But as in health care, practicing preventive care is more efficient and effective than rushing from crisis to crisis. Leading-edge help desks today are leveraging consolidation, automation and outsourcing to recast themselves as strategic resources that bring value to the software life cycle and all of IS's interactions with users.

The role of the help desk is no longer just fixing problems; the best ones act as emergency hotlines

and strategic tools, according to Jeff Rumburg, a vice president of the Meta Group Consulting division of Stamford, Conn.-based Meta Group Inc. These help desks guide their IT departments in monitoring where and when glitches happen and how to fix them, and they coach companies on how to keep those problems from happening in the first place. (To gauge your own desk's strategic effectiveness, see Rumburg's column "Good Help," Page 76.)

At Portland, Ore., truck manufacturer Freightliner Corp., MIS General Manager Rob Hassell envisions the help desk collecting data on frequently occurring problems, recognizing patterns and, most important, feeding that data to system designers for incorporation into next-generation applications. For example, Freightliner can design tutorials on



the most common problems and incorporate them into the software itself. "We already designed two levels of access into our dealer system knowledge base—a tutorial with pull-down menus and an alternative where they can skip the menus and do things more quickly," Hassell says.

As most CIOs realize, the help desk is the standard bearer for IS. "It's a strategic tool for us in the way we position ourselves for our customers," says Hassell, who admits his help desk isn't yet what it should be. "If we don't have a world-class help desk, it reflects negatively on our ability to support our dealers and internal customers."

Consolidate It

The most prevalent help desk trend is consolidation, bringing dispersed support groups together to present

a single and thus more efficient point of contact to users. At The Dow Chemical Co. in Midland, Mich., Director of Information Systems Dave Butler consolidated his help desk to better reflect the company's global strategy. Since Dow's businesses and work processes span the globe, it needs a global help desk that presents a single point of contact for users no matter where they are located. "The strategy of the company drives the IS strategy, which drives the [help desk] strategy," says Butler. The single point of contact makes life easier for global users, but it also affords the desk an enterprisewide view of the systems, users and their

Reader ROI

READ THIS ARTICLE TO LEARN HOW

- ▶ Your help desk can act as a liaison between users and application developers, influencing the design of systems
- ▶ Consolidation allows centralized, enterprisewide collection and analysis of support calls
- ▶ Outsourcing, though risky, can eliminate the hassles, not the value, of the help desk
- ▶ Automating help desk functions can free resources for more strategic pursuits

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Transactions in the Age of the Consumer



problems that is essential to effective preventive care.

Consolidation can take two forms: physical consolidation, putting all the help desk workers in the same location; and virtual consolidation, networking all their computers, even if the workers themselves are widely dispersed. No matter which course CIOs choose to corral their profusion of help desks, they had better do something before costs spiral out of control.

Rumburg partly blames the buyout trend of the late 1980s for the large number of help desks many companies have today. When businesses mushroomed, responsibility for technical help and support for new applications was not always assigned in a methodical way, so many software developers found themselves running de facto informal help desks. It may have been a great way to manage crises,

but it proved as excessive as the '80s themselves. Rumburg estimates that consolidation could save companies 15 to 20 percent of their costs per call each time the volume of help desk calls doubles. With the average help desk call ringing in at \$20, according to Meta, the savings could be big.

The profusion of help desks has been a problem at Freightliner, especially in the Level 2 support area, the group that handles the more difficult problems escalated from Level 1. "We had scattered Level 2 help—some were in end user areas and some in our e-mail areas," says Hassell. "We're pulling all these functions together with new dedicated management and new hires where they make sense." Hassell anticipates that consolidation will allow his desk to collect data on user problems and achieve a new consistency in reporting and categorizing of problems. The plan is to store this data in a "knowledge base," part of the SA-Expertise help desk management software suite from Software Artistry Inc. "When a call comes in," Hassell says, "the help desk rep can go into the knowledge base for that application. At some point we could take the knowledge base system and move it to our dealerships so that their first call for help can be to themselves. If they can't find their own answer in the knowledge base, the software will automatically escalate and transfer the inquiry to our help desk."

Centralization is often a first step toward a consolidated help desk. At Autodesk Inc., a San Rafael, Calif., vendor of computer-aided design and manufacturing software, Thomas Barthold brought together personnel from about 10 IS service groups and created an enterprisewide help desk called the Assistance Center, which now provides Level 1 support to 21 company IS groups. That reorganization was just a start but a good one. This centralization ensured that users would no longer have to endure a mad shuffle to find the person who could address their particular problem. It also ensures a more sensible and specialized division of labor. "Before consolidation, I had a lot of people on the help desk who were really more qualified to be network engineers," says Barthold, manager of the Assistance Center. These professionals are now free from mundane help desk tasks to perform higher-level duties, such as network trouble-shooting and network planning and development, leaving simpler requests to the help desk staff. "Now they're all in the appropriate place, and everyone does the job he or she is good at and prepared for," says Barthold. And Autodesk is no longer paying high salaries for skilled network administrators just to change a password or set up a new employee's account.

Outsource It

A help desk is tough to staff, doesn't get much respect from management and can be very expensive to operate. Turning it from a cost center to a value center

Give Us the FAQs

MANY OF THE MOST COMMON QUESTIONS A HELP DESK receives are also the easiest to solve. One of the simplest ways to reduce the call volume and the cost is to list these frequently asked questions and their answers on the Web. Here is a sample of FAQs found on the intranets of companies cited in this article.

- What are the hours of operation for technical support?
- How do I contact technical support?
- What is the response time once I've submitted a request?
- Does Windows 95 require 16MB or more of RAM to run well?
- Will Windows 95 run my current applications?
- How can I create new folders for my desktop?
- How do I know that my machine is capable of running Windows NT Workstation 4.0?

sometimes doesn't seem worth all the trouble, so some companies just wash their hands of the entire matter. But the decision to outsource help desk support is risky. On the one hand, it might reduce your costs and free internal staff to focus on more complex pursuits. On the other hand, it cedes control of the most significant point of contact IS has with its users.

It's always easier to hire someone to do something than to do it yourself. But IT is a strategic tool, and how you leverage it determines your competitiveness, says Colin Mahony, an analyst at The Yankee Group, a technology research firm based in Boston. When you outsource any function, any strategic use it once served will die a quick death, he says.

Nevertheless, companies such as Microsoft Corp., Dell Computer Corp. and Compaq Computer Corp. have outsourced their help desks to improve their bottom lines. Microsoft, whose hiring and retaining costs can be high, outsources its first-level internal tech support services to systems integrator Entex Information Services Inc. of Rye Brook, N.Y. Microsoft saves its expensive salaries and company benefits for the technicians and product specialists who investigate long-duration or repeat calls and uses that data to improve the company's main money maker: its software.

Whether the outsourcer is fielding only Level 1 calls or handling all support inquiries, CIOs should make sure the help desk is doing more than just answering the phone. At Dow, which uses Digital Equipment Corp. employees to staff all of its help desk, the service-level agreement is based on the time it takes to solve a problem and answer calls. But Dow, whose help desk receives between 500,000 and 600,000 calls a year, also tracks the satisfaction of users to make sure the outsourcer is performing well. CIOs should also insist that their outsourcer provide detailed reports, which internal staff should use to



analyze problem patterns

and make recommendations to system developers.

Another caution: If users work with proprietary software, outsourcing may not make sense. At Chick-fil-A Inc., the Atlanta-based fast food chain, Manager of IT Client Services Michael Garrison determined that outsourcing his help desk wouldn't be cost-effective. "About one-half of our calls come from [users who work on] proprietary software that changes frequently, which makes it very difficult to keep external staff up to speed," Garrison says. Because of the environment of change, it would also have been difficult to measure and monitor the vendor's performance relative to service-level agreements.

Automate It

If your help desk posts a list of frequently asked questions or allows people to submit their own trouble tickets, you are part of another popular help desk trend: automation. Chick-fil-A provides users with answers to frequently asked questions through interactive voice response systems, Web pages and error messages displayed in custom software applications. The goals are to help users help themselves, save the help desk time and money, and let the troubleshooters spend more time on complex, potentially costly problems.

Autodesk has automated almost all of the processes on its help desk, and the company now makes its call tracking system available to all employees worldwide on the company intranet. Two years ago, calls were submitted to the help desk primarily through phone and e-mail. These requests were entered manually into Autodesk's call tracking system, the Remedy Action Request System from Remedy Corp. in Mountain View, Calif.,



Equal Parts Care and Cure

That's the recipe for the model help desk staff at Shell Services

AS THE MAIN POINT OF CONTACT BETWEEN IS AND THE REST of a company's workforce, organizations have tried to build desks that not only answer technology questions but show a positive face to the user as well. The essential ingredients are a diverse staff with a proper mix of customer service skills and diagnostic abilities.

At Shell Services International, the independent IS arm of Shell Oil Co., the desk's success depends on the personal touch. "Remembering details about customers' lives, what kinds of issues they were having with their computers, knowing what's going on in their businesses, calling them after it's over to check up—those are just a few of the ways we stay in touch with our customers," says Reesa Thorne, Shell Services' manager of customer and infrastructure technology services for Europe and Africa.

Thorne keeps her staff on the lookout for all kinds of problems, "both those that have already happened and those that might happen soon," she says. For example, the help desk recently received three calls from one building on the same day, all different problems, but all coming from the same floor. That was enough of an anomaly that one of the staffers suspected there might be a wiring problem. The help desk was not only able to respond to the calls, but it also fixed the wiring problem before it caused a real disaster.

Thorne attributes her staff's powers of deduction in part to its diversity. The group includes the expected techies, but it also has a number of people with backgrounds in such areas as theology and zoology. By employing different people with different problem solving methods, Thorne says, the help desk can act as more of a strategic resource.

—R. Greenberg

which the company had implemented in 1991. It took a help desk worker an average of more than three minutes to enter such basic data as problem description. In May 1996 the company rolled out intranet-based direct user access to the Remedy system. Autodesk created templates on the intranet to help users enter common requests, such as office relocations or password changes. These templates prompt users for such essential pieces of information as their computers' asset tag numbers and old and new office numbers.

Once the customer submits the request, Remedy's notification tool alerts the help desk staff. A click of the mouse on the notification brings up the ticket, and assuming the user has

entered all the details correctly, the request is filled in less than 15 seconds. At rollout, to encourage people to use the intranet, "we called everyone who used the Web tool back in 30 seconds," says Barthold. "When we responded, callers said, 'No kidding, I still have my finger on the 'submit' button.'"

Fifty-four percent of help desk requests now come in through the intranet. It cost Autodesk \$16,000 to set up the system—\$12,000 for the product, \$3,000 for a SunSparc workstation and \$1,000 in labor. The system nearly paid for itself in its first year.

The Chase Manhattan Bank's system is so highly automated that the company has assigned it support tasks in a variety of areas, not all of which relate to traditional IT. "We've gone from a help desk responding to people's problems from call to call to a comprehensive internal command center," says Walter Schiller, senior vice president of service delivery management. For example, if Chase's monitoring system, called Service Management Automation and Reporting Technology (SMART), gets an error code from any of the bank's 1,700 ATMs, it first uses voice technology to call the branch office and resolve the problem. When ATMs are low on cash, SMART calls the appropriate person at the bank branch. That person has 30 minutes to refill the machine before the system escalates the request by calling the first contact's boss. "Our branches love to hate this device," says Schiller, "but senior management just loves it."

The Chase system uses a series of formulas to decide who gets calls and to keep track of the time desk agents take to solve a problem. It also tallies how long each user stays on hold. That same system comes in handy when service center managers are trying to schedule breaks or training sessions; they use call logs to find out when their employees are least busy.

Schiller credits SMART for saving the company more than \$1 million in operating costs last year. Chase has automated about 75 percent of its monitoring processes for ATMs, branches and online banking.

So is it possible for the underappreciated, beleaguered, triage-style help desk to become a strategic force in IS? Ask Chick-fil-A. "Our influence has grown in the past several years," Garrison says. The help desk is inverting the traditional software development cycle, which once relegated the support arm to the very end. Now Chick-fil-A's help desk agents review software designs and user interfaces at the beginning of the cycle. Help desk staffers are involved in testing, which helps them learn the system before they have to answer questions about it. That's a far cry from the old days, when the help desk staff would see a quick overview of a new application the day it went live. Such significant changes prove that help desks can still be life savers but much more efficient and effective ones. **CIO**

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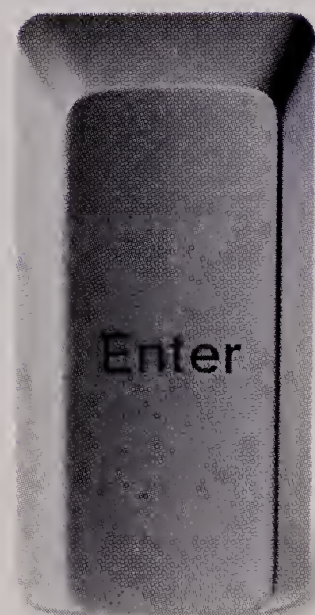
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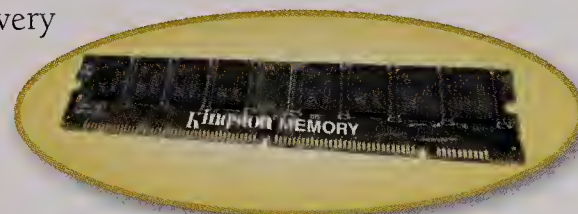
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Randall Grossman, a senior vice president, steers Fleet Bank to more profitable customer selection.

Ad



Marketing secrets from the financial sector show how data mining charts a profitable course to customer management

BY PETER FABRIS

Advanced Navigation

HAVE YOU EVER SEEN ONE OF THOSE posters that at first glance looks like a jumble of colored dots? Stare at it, and a three-dimensional picture will jump out from the pointillistic background. Now, think of those dots as the bits of information about your customers contained in your company's databases. If you look at the dots of information in the right light and at the right angle, they will reveal patterns that yield insight into customer behavior.

The banking industry has stared hard at its customer data "dots" to analyze customer behavior, and it has learned valuable lessons

Reader ROI

THE BANKING INDUSTRY IS A LEADER IN THE application of data mining for marketing and decision support. In this article, discover

- ▶ How data mining provides insight into the behavior and needs of customers
- ▶ How banks use data mining to analyze and increase customer profitability
- ▶ Why data mining is effective for credit risk management

for other industries that use data mining. Although banks have employed statistical analysis tools with some success for several years, previously unseen patterns of customer

behavior are now coming into clear focus with the aid of new data mining tools.

Data mining is the automated analysis of large data sets to find patterns and trends that might otherwise go undiscovered. By studying these patterns and trends, banking executives can predict with increasing precision how customers will react to interest rate adjustments, which customers will be most receptive to new product offers, which customers present the highest risk for defaulting on a loan and how to make each customer relationship more profitable.

"We're trying to understand the needs, preferences and behaviors of customers," says Russel Herz, senior vice president in charge of liability product management at The Chase Manhattan Bank in New York. Data mining has become an indispensable tool in that pursuit. "It permeates everything we do—pricing, promotion and product development," he says. Data mining led Chase to take the unusual step of reducing required minimum balances in customers' checking accounts for two consecutive years because the bank learned that customers who have difficulty maintaining a minimum balance may take their business to competitors with lower minimum balance requirements. Executives at the bank reasoned that customers who defected to another bank because of dissatisfaction with Chase's checking account terms might desert the bank for their other banking needs as well.

PHOTO BY WEBB CHAPPELL

COVER STORY: DATA MINING

So while it was clear that for a certain segment of Chase's customer base, the minimum checking account balance was a key factor in their choice of banks, Herz still wanted to know if those customers were profitable for Chase. On the one hand, if Chase was losing profitable customers because its minimum balance requirement was too high, then lowering it would make sense. On the other hand, if the defecting customers weren't profitable, then the smart decision would have been to leave the minimum balance alone.

Chase analyzed the attributes and habits of its checking account customers for clues that might reveal how to set the minimum balance requirement to retain profitable customers. Herz's staff used data mining to develop profiles of customer groups whose members consistently had trouble maintaining minimum balances. They sought answers to questions like, How many checks do they draw per month? Do they use ATMs or conduct most of their business with tellers? and What other accounts and products do they hold? The answers helped Chase determine who their profitable customers were and predict the dollar floor at which to set the minimum balance to retain them. As a result of the two reduc-

tions of the minimum balance, Chase's percentage of profitable customers to overall customers went up. Herz doesn't want to tip his hand to competitors by specifying the percentage, but he says it was very significant.

Chase has possessed the customer data to alter strategy on such factors as minimum balances for many years, but recently the tools to study that data have improved significantly. Herz says, "It's

To obtain a full picture of customer relationships, an organization needs access to all customer data enterprisewide.

been like [a doctor] going from having nothing to X-rays to an MRI." Herz can now predict the impact of strategic decisions with better precision and can make informed decisions much faster.

Tools to Guide Your Way

Banks use an array of tools to analyze the customer data contained within their data warehouses and data marts. Data mining tools are still in the early stages of development, so practitioners may try several new tools each year. Boston-based Fleet Bank's data management

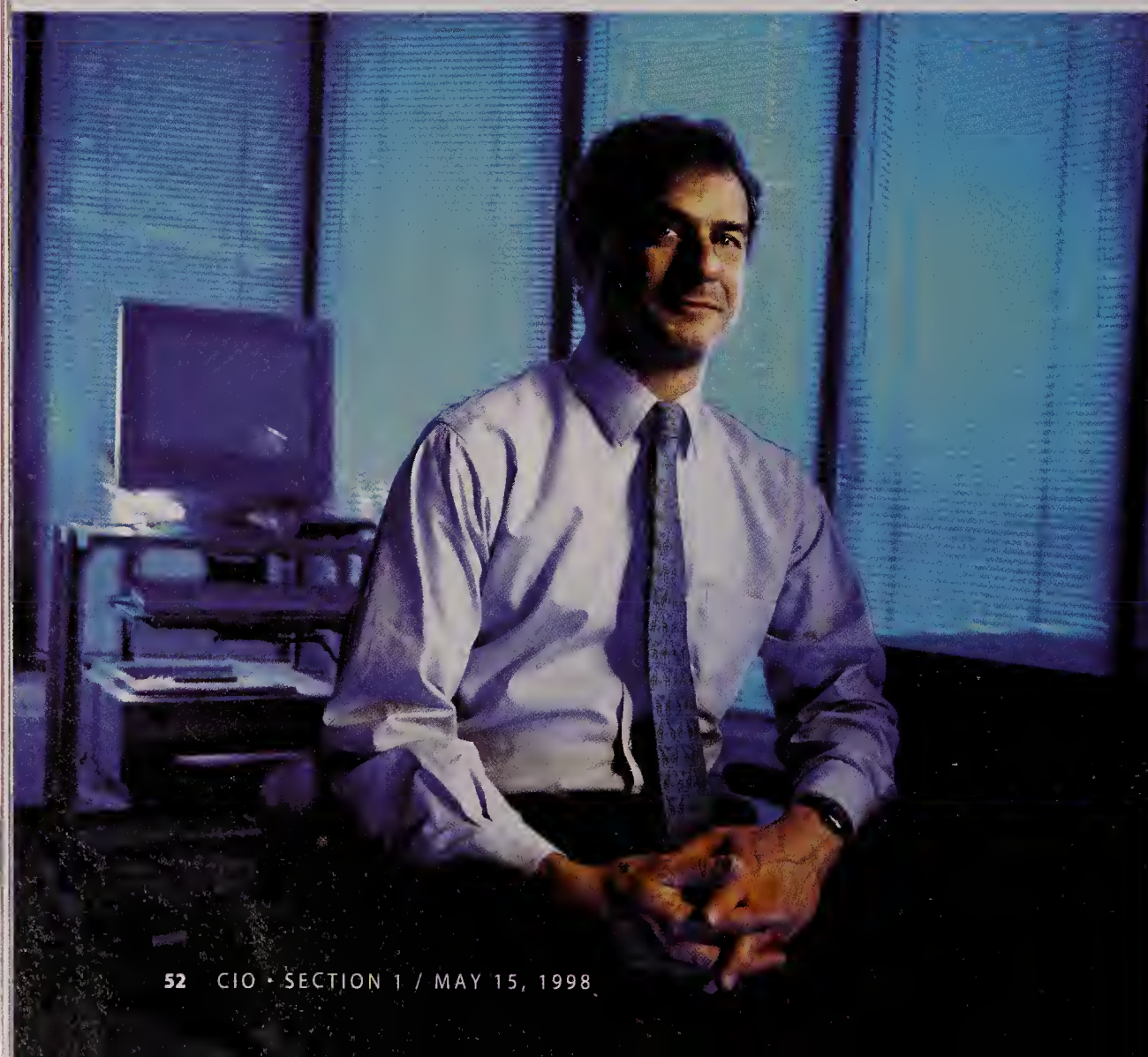
and analysis group has tested at least 15 tools, including online analytical processing (OLAP) and other analytical products, in its two years of existence. "We're constantly looking at new software," says Victor Hoffman, vice president and manager of analytics at Fleet. Some vendors tailor their products for specific industries. San Francisco-based HyperParallel Corp., for example, offers a module with algorithms specific to the

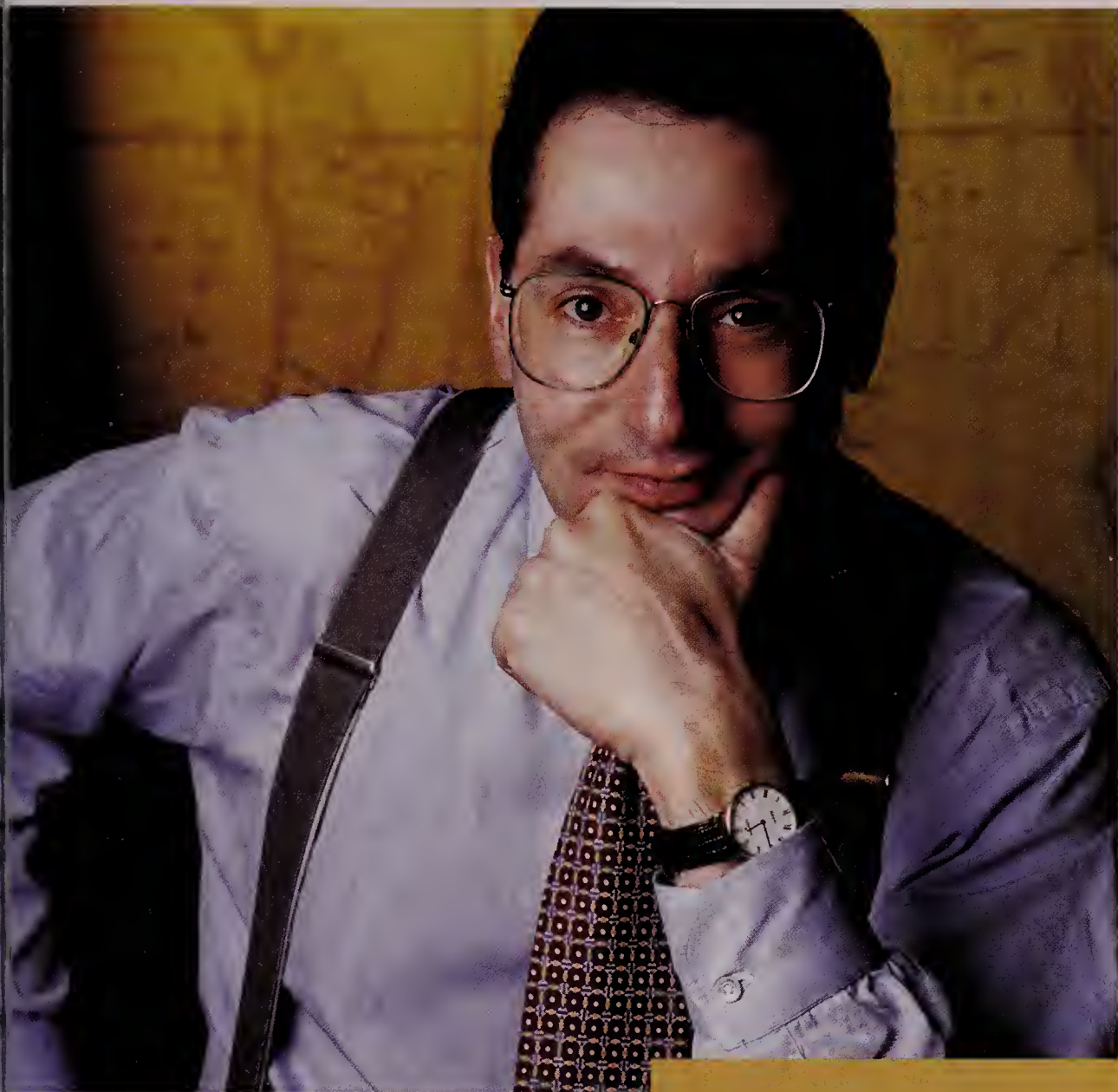
financial services industry in its data mining product. IBM Corp. will release a finance-industry-tailored version of its DecisionEdge software that incorporates the company's Intelligent Miner product later this year (see "Navigation Tools," Page 54).

Of course, even before deciding which tools are best suited for a problem, data mining analysts must make sure they have consistent, accurate data. Banks historically have had separate databases for different areas: one for mortgages, another for auto loans, another for checking accounts and so on. But to obtain a full picture of customer relationships, an organization needs access to all customer data enterprisewide. Because of the legacy of multiple databases from several departments, data fields frequently contain different definitions and values in different databases, which can create misleading apples-to-oranges comparisons. Such inconsistencies have to be corrected before mining can begin. (See "Buried Treasure," *CIO*, Oct. 1, 1996.) For most companies, that's no simple task, and it slows down the work of data mining groups. "When we're building a data mining model, we spend the vast majority of our time—probably 75 percent of it—on data validation," says Chris Kelly, vice president and director of database marketing at Bank of America in San Francisco.

One of data mining's valuable traits

Russel Herz, senior vice president, uses data mining to identify and retain Chase's best customers.





At Fleet Bank, **Victor Hoffman**, vice president, has directed evaluation of at least 15 data mining tools.

ing a higher interest rate, says Fleet's Randall Grossman, senior vice president and director of customer data management and analysis. To do so decreases the profitability of such customers to the bank. To be sure, Fleet still puts a lot of effort into pitching additional products to its customers, but it now does so more selectively. "We target customers who are not only likely to buy the product but ones for whom the value of the relationship increases for us," Grossman says. In other words, Fleet wants to know not only which customers might buy a new product but also which customers will generate profits if they do buy it. Grossman says the bank's second goal for this sort of data mining is to find out how to "reconfigure, over time, [its] product and service offerings to enable [it] to profitably serve customers who today are unprofitable."

Many financial institutions use data mining to study the needs and habits of customer groups in the interest of "customer relationship management." The

is that results sometimes challenge commonly held assumptions. Other types of tools, such as OLAP, usually don't yield findings that directly challenge the status quo. Data analysts use OLAP tools to test the relevance of a theory, whereas they apply data mining tools to a problem in hopes that the findings will suggest an answer. Analysts use OLAP to answer, Is this true? but data mining can provide insight to answer, Why is this happening? and What might happen if...?

Managing Customers

Examining problems in a new light sometimes leads banks to abandon venerated strategies. Fleet subscribed to the long-held notion that the more cross-selling it did, the higher its profits would be. But the bank discovered through data mining that it doesn't always work that way. For instance, it doesn't pay for the bank to persuade customers content to leave their money in savings accounts to invest in certificates of deposit bear-

Data Mining Insights

Bank on these words of wisdom

"Don't make any decisions before you finish your research. I'm very careful not to give my opinion to my analysis people before the work is finished."

—Russel Herz, *The Chase Manhattan Bank*

"Hire statistical analysts who can understand business problems and have a hunger to apply their knowledge to solving business problems."

—Victor Hoffman, *Fleet Bank*

"Statistical techniques are embedded in neural network-based products. Consequently, some people think that data mining is an automated process that doesn't require sophisticated analysis. That's an illusion."

—Jianmin Liu, *Bank of America*

"Mining data derived from ERP systems can get very complicated. ERP systems are notorious for making databases difficult to manage because it's tough to selectively delete data. ERP-fed databases tend to grow and grow and grow."

—James Watson, *president of Doculabs Inc., a Chicago IT research firm*

"When evaluating data mining products, choose proven technologies that give you the flexibility to grow and that give direct access to relational databases rather than those that require an intermediary step."

—Jan Mrazek, *Bank of Montreal*

Navigation Tools

A compass and a sextant may be all you need to steer by the stars, but when it comes to data mines, the right vendor will supply you with the product that best suits your needs

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- **Cognos Inc.**
www.cognos.com
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www.datamining.com

For a more comprehensive list of data mining vendors see the KDNuggets Directory Web site at www.kdnuggets.com/companies.html.

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objective is to increase the amount of business with each customer. Banks regularly take aim at that goal with targeted promotional mailings and in the normal course of customer interactions; however, data mining helps them market more precisely, saving money on mailings and increasing the effectiveness of cross-selling efforts.

Fleet recently used data mining to identify the best prospects for its mutual fund offerings. Grossman's team mined customer demographics and account data including transaction activity and account balances along several product lines. From that analysis, they found customers who were likely to invest in mutual funds, and they used that information to help Fleet's Investment Services division target prospective clients.

Mining the Call Center

Some 13 million customers call Bank of America's West Coast customer service call center each month. It's an unbeatable marketing opportunity, but "rather than pitch the product of the week, we want to be as relevant as possible to each customer," says Kelly. So when a customer calls, a rep has a much better chance of cross-selling if he knows what accounts the customer holds and whether the customer is part of a group with a propensity to buy a particular product.

At Bank of America, customer service

accounts, demographic information, the number of monthly transactions and their choice of banking channels (teller, ATM or phone). The Toronto-based bank calculates current profitability profiles of households and produces models to predict the profitability of customers over a lifetime.

Managing Risk

In addition to helping increase the value of customer relationships, mining customer information databases aids banks in managing risk. Bank of Montreal, for example, analyzes mortgage customers' transactions in checking, savings and other accounts for insight into who is at risk of defaulting. The bank was surprised to find that some customers who consistently made their mortgage payments late were not necessarily at a high risk of defaulting. The bank found that a certain type of customer is in the habit of paying bills late but has the wherewithal to fulfill his or her obligations, says Jan Mrazek, chief specialist of the data mining group at Bank of Montreal. By analyzing the transactional behavior of customers across all their accounts, the

While data mining specialists extol the virtues of the technology in one breath, they caution about its complexity in the next.

representatives equipped with customer profiles gleaned from data mining pitch new products and services that are the most relevant to callers. For example, a customer in a certain age group who has children and a home equity loan with the bank is a good candidate for taking out a student loan. Data mining helps the bank identify such customers.

Bank of Montreal mines its 1-terabyte "customer knowledge database" to develop profitability profiles of customers based on multiple factors such as the amount of money in particular

bank can see which customers experience periodic cash flow crunches and which may truly be in danger of defaulting.

Some banks are currently testing data mining tools to manage their credit portfolios more efficiently. Data mining holds great promise in assessing the risk of a bank's entire portfolio of loans, says Jianmin Liu, vice president and project manager in credit risk management for Bank of America's mortgage division. By analyzing customer behaviors such as payment habits, data mining can provide answers to vital questions such as

COVER STORY: DATA MINING

understand business concepts thoroughly or run their findings by business partners for reality checks, Liu says. Doing that in the customer relationship management area is important and is even more important in credit risk management, which requires more specialized knowledge and experience, he says.

As data mining vendors improve their products, they've begun to assert that their tools can be used by business managers without extensive training in statistics. Beware of such pitches, data mining practitioners say. To get the best results, you need experts who understand the advantages and limitations of the half-dozen or so algorithms used in data mining products. "There are some products where you can try a canned approach and that might work sometimes," says Hoffman. Those tools are far more valuable, though, in the hands of people who understand what's going on under the hood, he says.

Bank of Montreal's Mrazek says sometimes his staff applies several different statistical models to one problem. The most significant results might lie in the intersections of each model's results, and you need a thorough understanding of the algorithms to interpret them, he says. Banks that have made serious investments in data mining typically employ several people trained in statistical analysis or applied mathematics. "If you don't have the statistical expertise, you're using the tools blindly," Mrazek says.

So while data mining specialists extol the virtues of the technology in one breath, they caution about its complexity in the next. "Data mining is a powerful technology, but it's not magic," says Herb Edelstein, cofounder and president of Two Crows Corp., a data mining consulting firm based in Potomac, Md. "It doesn't sit in your computer, find things in your databases and tell you what to do with them." Data mining can be downright tedious, Mrazek says. Some models can take several months to complete.

But, like gazing at one of those 3-D posters, persistence pays off. And banks are now seeing revealing pictures of their customers within the "dots" housed on their databases. Those images reflect higher profits. **CIO**

Senior Writer Peter Fabris can be reached at pfabris@cio.com.



Jan Mrazek, chief specialist of the data mining group at Bank of Montreal, manages risk by analyzing transactions.

What percentage of loans will be refinanced next quarter? What percentage will go to foreclosure? and What percentage will be in serious delinquent status? Accurate answers to these questions allow credit risk managers to allocate optimal loan loss reserves—funds set aside to cover bad loans—which is important to profitability.

Credit risk assessment is a new area for data mining, Liu says. He is testing the beta version of a data mining product from SAS Institute Inc. of Cary, N.C., and is evaluating its various algorithms. His goal is to develop statistical models that accurately predict payment behavior, for example, how likely it is that a particular borrower will default on or, alternatively, prepay a loan. Accomplishing that will take patience and a lot of trial and error, Liu says, because data mining sometimes leads to

dead ends and can yield misleading information.

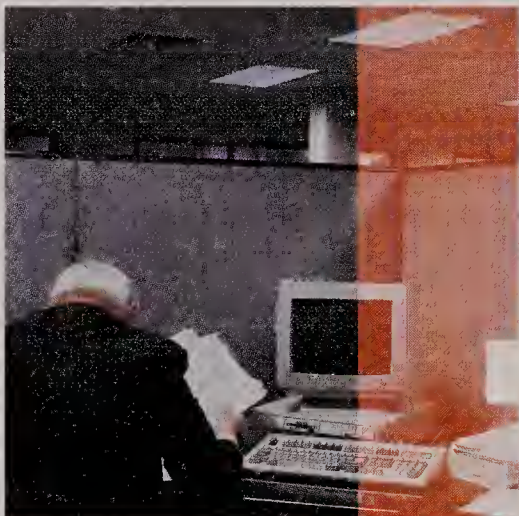
For example, Bank of America built a data mining model to predict attrition of small business customers. One of the key factors was the length of time small businesses held accounts with the bank. That indicator proved to be misleading, however, because about 60 percent of small businesses go bankrupt within three years. Kelly says Bank of America's model was a better indicator of companies headed for bankruptcy rather than those headed to a rival bank. The bank subsequently revised the model to eliminate that factor.

Read It, but Don't Weep

To properly interpret results, data mining teams should combine business-savvy members with statistical experts. It's essential for statisticians to either

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Exchange comes with built-in connectors to cc:Mail and Microsoft Mail. To Lotus Notes. To mainframe messaging. It supports every standard Internet protocol. And whatever Exchange connects, it enhances. So while your cc:Mail and Microsoft Mail users still keep their data and get their e-mail, they also begin to communicate and collaborate on a global basis. They get the task management, calendaring, contact management and collaboration tools of the Outlook™ 98 client. They can use Microsoft Office to create work, exchange work, collaborate on work. All on a unified platform.

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As Arthur Andersen's knowledge base expands, Bob Hiebeler looks for new ways to simplify the user interface.



Where Are They Now?

When it comes to major strategic implementations, it's one thing to lift off and another to make the right moves once you're in orbit. Here's an update of three strategic launches on which *CIO* has reported in the past.

BY DAVID PEARSON

ARTHUR ANDERSEN'S GLOBAL BEST PRACTICES (GBP) knowledge base just keeps growing and growing and growing.... When *CIO* reported on the effort in 1996, GBP, which was launched in 1992, contained 12,000 pages of recommendations on approximately 40 business processes, such as surveying customer satisfaction, developing and training employees, understanding markets and customers, and creating and managing a human resources strategy (see "In the Know," *CIO*, April 15, 1996, or visit www.cio.com/archive/041596_ins.html). At that time, GBP was available only to the company's professional employees, including accountants, tax advisers and business consultants, who used it to guide their clients in improving performance.

Arthur Andersen:
Knowledge Base

Today GBP encompasses about 100 processes contained in more than 30,000 pages. Once available only on closely guarded CD-ROMs, the knowledge base is now accessible to consultants

*"There is **NO** such thing as a finished knowledge base. You're always **improving** it, always **working** on it."*

—BOB HIEBELER

via the company's KnowledgeSpace intranet and to customers who subscribe to KnowledgeSpace, Andersen's Internet-based business service launched in December 1997.

While GBP has been growing in the number of processes it contains and the level of detail available for each, updates have been coming fast and furious. Direct data access for clients was a logical development in the management of GBP's quick growth and metamorphosis to the more accessible KnowledgeSpace, says Bob Hiebeler, managing director of KnowledgeSpace.

It happened like this: Arthur Andersen's business consulting service had already been forming a number of virtual competency centers, or teams of geographically dispersed consultants focused on particular aspects of business such as finance and revenue enhancement. The launch of the GBP knowledge base was closely followed by a dozen new such groups. "They have fed off one another," says Hiebeler. "We feed [the competency centers] more best practices information, and they feed us company examples and case studies that can be incorporated into GBP."

As the GBP knowledge base was becoming KnowledgeSpace, in December 1996 Arthur Andersen created a new operating unit, AA Knowledge Enterprises, to manage KnowledgeSpace as well as electronic commerce and distance-learning divisions. GBP, now under the purview of Knowledge Enterprises, had 40 dedicated staffers in 1996; today there are more than 70 researchers, writers, diagnostic tool developers, call-center personnel and support people, all in Chicago.

We reported in 1996 that the creation of the GBP knowledge base caused some tension between Arthur Andersen's business and technical people. Since then, however, Hiebeler says a "much closer

collaboration" has developed. It's helped that the knowledge base has as a product moved from CD-ROMs, whose timeliness expires almost as soon as they are pressed, to the readily updatable Internet/intranet. "Now the concept of 'versions' isn't there; we put up new pieces and new updates every week," says Hiebeler.

As GBP has grown in size and scope and become available to a wider array of users, Hiebeler's group has constantly looked for ways to refine the interface for ease of use. "We'll learn a lot more as the market interacts with [our product]. Our customers are quite demanding," adds Hiebeler. "They want to get at precisely what they need—and get to it very quickly."

In 1996 CIO listed eight lessons Andersen had learned about implementing changes that shift a company's culture and the way it does business—which is what the company said its GBP knowledge base had done. Hiebeler has updated his take on each lesson.

Lesson 1: Begin before you're ready. "That has certainly held true. We've learned a lot more by rushing to get on the playing field and learning as we've gone than we could ever have picked up in a drawn-out planning and preparing process."

Lesson 2. Commit to a rapid release schedule. "Make that 'Commit to rapid updating.' You have to maintain a sense of urgency and organization and constantly ask, 'How have we improved the knowledge base this quarter?'"

Lesson 3. Plan to dazzle your customers. "Actually, dazzling people is not as important as making it easy for them to use the knowledge base. Because as the knowledge base has gotten larger, there is more of a requirement to simplify the interface."

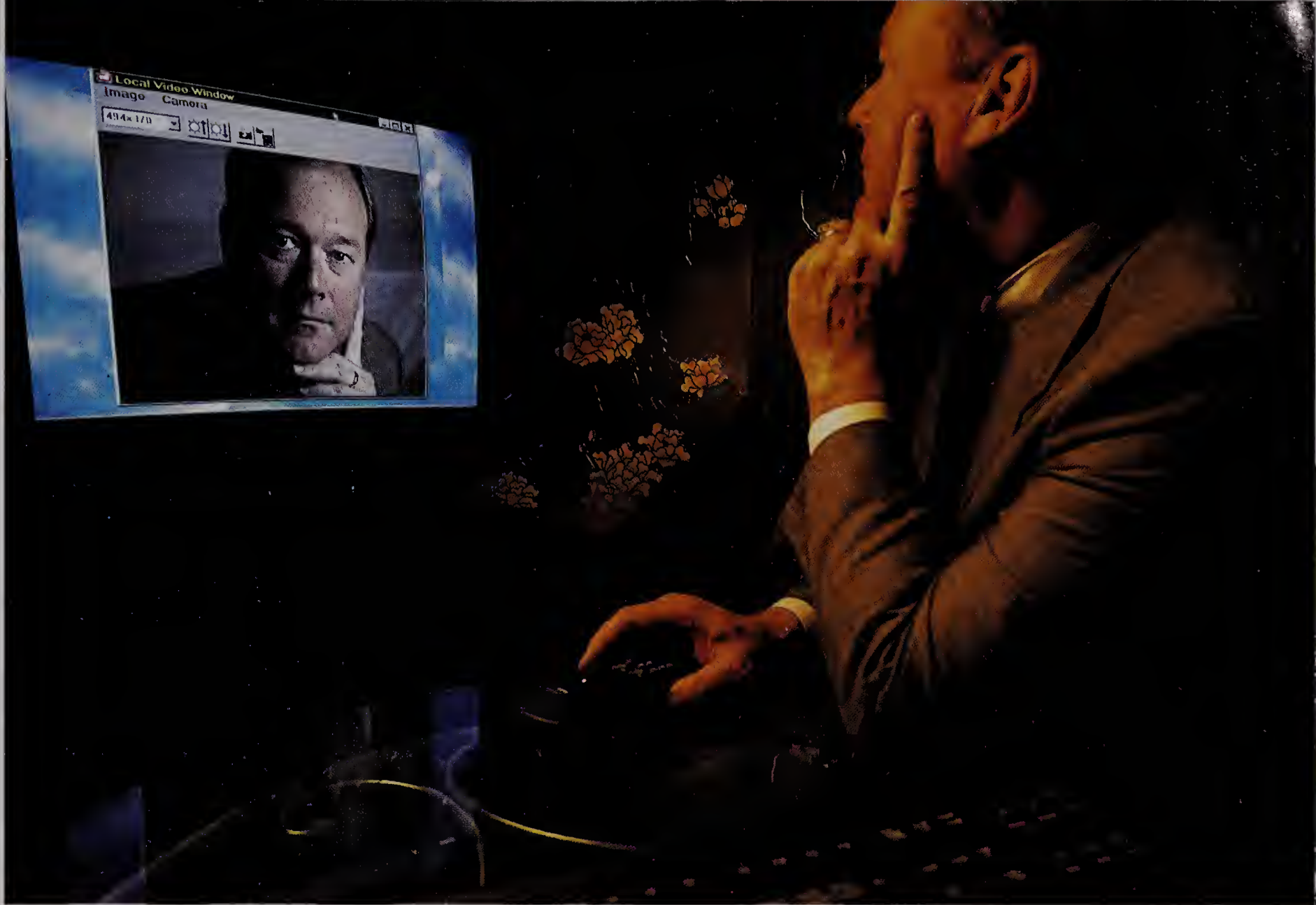
Lesson 4. Keep it in prototype longer than you should. "That has evolved to 'Keep it in perpetual prototype.' Our attitude is, there is no such thing as a finished knowledge base. It never fully arrives because you're always improving it, always working on it."

Lesson 5. If you must train, be clever about it. "The key is to align resources with job tasks so that you make the knowledge base part of the daily life of your people. We stress that everyone must check voice mail and e-mail every day. Now to that we've added a third habit: Check KnowledgeSpace."

Lesson 6. Press hard on technology to deliver business value. "It's really more a matter of keeping everyone focused on delivering what the customer wants."

Lesson 7. Rely on fuzzy feedback before hard measures. "Feedback is hard because it's all over the map. You have to be good at seeing the main themes, the averages. The things we do that make the most impact are those in the center, the ones that affect the highest numbers of people."

Lesson 8. Choose speed and specificity over size and



generality. "We got that right. Toggling between the general lesson and the specific example of its application makes the abstract real for the customer."

Schlumberger: Worldwide Network

AT SCHLUMBERGER LTD., A NEW York City-based manufacturer of testing and measurement systems and provider of high-tech services to oil companies, they're still talking about the young engineer who was saved from fumbling a \$2 million deal in the Arabian Desert. Seems he needed precise measurements from a certain pumping-parameter recorder that was spitting drivel into the dunes. A dash to his satellite dish-topped truck, an e-mail to senior colleagues in France, a couple of anxious moments applying their suggestions to the recorder, some tinkering with the recorder and the young man was soon back in business.

CIO retold that story to our readers when we reported on Schlumberger in February 1997, at which time we also honored the company with an

Enterprise Value Award for setting up and deploying a massive, open-architecture network connecting most of the company's 60,000 employees in about 60 of the more than 90 countries where it operates (see "Net Results," CIO, Feb. 1, 1997, or visit www.cio.com/archive/020197_results.html).

Now, however, the story doesn't seem so unusual to Schlumberger leadership; it's just one more piece of anecdotal evidence that justifies the company's heavy investment over the past several years in SINet, its worldwide network.

Schlumberger launched the network in 1991 after having spent two years and \$6.5 million developing it. The budget reached \$17.6 million in 1996, doubled to \$35 million in 1997 and doubled yet again to \$70 million in 1998. (The spending mix hasn't changed over the past year. Operational charges account for 45 percent of total dollars spent, followed by training at 42 percent and technology purchases at 13 percent.)

According to David P. Sims, technical manager for IT in the company's Sugar Land, Texas, office, that's a fair price to pay for what the company has gotten in return: Revenue per employee has increased 50 percent over the last five years. And, says Sims, even if it's difficult to demonstrate a direct connection between improving profitability and expanding network services, company leadership is convinced the latter has made a substantial contribution to effecting the former.

Under the pressure of all that spending, the biggest challenge for Sims has been to manage

Schlumberger's David Sims says the company's global network has helped raise revenue per employee by 50 percent in five years.



Sam Alkhalaf's group at MasterCard fine-tunes the company's data warehouse by cleansing data at the transaction level.

demand for more and more bandwidth. For instance, one year ago, Schlumberger personnel in Asia and the Middle East were connected to SINet mainly by an overloaded, 128Kbps circuit across the Pacific Ocean. A 1997 upgrade to a 1.5Mbps T1 line has brought users much faster access to the network. At \$60,000 a month, the T1 is also approximately four times more expensive, but, says Sims, the T1 connection is a perfect example of the "soft" returns on investment that Schlumberger has come to expect since launching SINet.

"We can't just go out and do things like put up additional bandwidth," says Sims. "Operations folks have to agree that any network initiatives are necessary for their business because they fund our central infrastructure budget." He adds that this kind of consensus doesn't always come easy because operations management is a decentralized amalgam of highly autonomous managers. "Sometimes we have to be willing to wait for things to get painful enough for enough people." For example, 9,000 employees in Asia and the Middle East had painfully slow access to the Internet, or no access at all, prior to the bandwidth expansion. "How do you quantify the return on rectifying a situation like that?" asks Sims.

Up next for SINet will be an enterprise-level cryptography-based security system, a knowledge management system and, yes, more bandwidth—projects likely to earn widespread support from Schlumberger's far-flung operations team.

Sims is pleased to report that since *CIO's* original article on Schlumberger, the respect for IT within the company has risen as sharply as its budget. "We're putting in longer hours, and we have more

responsibility, but it's good because people who have been involved with IT for a while have graduated from [seeing us as] the geeky guy down in the corner office to a real partner in the business."

MasterCard: Data Warehouse

IN SPRING 1995, MASTERCARD INTERNATIONAL Inc., based in Purchase, N.Y., set out to build from scratch a data warehouse that could deliver consumer purchasing data to the desktops of the credit card company's member banks. Up to that time, the banks had to formally request such information and wait, sometimes for days, while MasterCard staff prepared reports. Not a bad system but definitely not the cutting edge in an age when the rallying cry "marketing to millions, one at a time" was achieving mantra status.

Over the next five months, an internal development team brought in vendors, gathered a terabyte of data from the company's transaction-processing systems, integrated an end user front end, and tested, debugged and delivered the service in beta to its first group of customers (see "Mining the Possibilities," *CIO*, June 1, 1996, or visit www.cio.com/archive/060196_mast.html). Today

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that application is an integral part of the company's IT infrastructure, closing in on 2 terabytes (an Oracle 7 database running in an AT&T System 3600 parallel processing environment), and at least a dozen decision-support applications have since been spun off—not only for member banks but also for MasterCard's internal operations. The challenge now facing business and IT leaders inside

*“Unless you can **guess** all the technology **pieces** you’re going to need—and you will **not** be able to—you’ve got to be flexible.”*

—SAM ALKHALAF

MasterCard is to keep up with the demand for new ways to use the data. “We’re always getting asked, ‘Can we get this out of the warehouse? Can we get that?’” says Sam Alkhalaf, senior vice president of technology and strategic architecture. “Demand has gone nowhere but up.”

One of the applications spawned by the data warehouse, MasterTagger, allows member banks to combine their customer data with the MasterCard data warehouse and run queries on the combined database. When a bank puts together a direct-marketing program, MasterTagger offers a more detailed profile of purchasing patterns than the bank could formulate on its own. Another example of the surge in database demand is Authorization Advisor, which provides MasterCard and its member banks with performance data on authorizations by crunching the numbers about accounts, amounts, peer group averages and average transaction times.

A number of technical aspects of the data warehouse have been improved: There’s been an upgrade to a newer version of Oracle (7.3), plus enhancements to connectivity, backup processes and batch processing. Yet, says Anne Grim, formerly MasterCard’s senior vice president of global information services, some of the most important developments have come “not so much in the technology as in the understanding of how to use it on the business side. It’s been satisfying to see our member banks realize an incremental lift in the efficiency of their marketing.”

The data warehouse has been good for internal

relationships at MasterCard as well. Having constructed the data warehouse primarily for an external audience, the company finds itself managing a technology evolution that’s the inverse of the typical scenario: Internal operations has caught wind of the resource that customers are using and wants a piece of the action. Alkhalaf notes that the user-query tools that MasterCard originally installed, Information Advantage Inc.’s DecisionSuite business analysis software, had to be tailored and augmented with home-grown tools to keep up with the shifting demands and diverse user groups. “You realize over time that not all user groups want one way of accessing the data,” he says. “It turns out that it’s pretty unrealistic to think that one tool fits all.”

For example, the member banks needed to drill down deep into the data, automatically segment customer groups, create control groups to test marketing programs on and track results over time. Meanwhile, some internal users were looking for a simple way to do basic MIS reporting. “Some of the tools we had in place were just too complex and unnecessary for what people were using them for,” says Alkhalaf. “We’ve increased training on those for the users who need to drill real deep and developed templates for the more basic and common questions lots of other people need to run.”

Alkhalaf’s group has worked to improve the performance of the data conversion, extraction and loading processes. The company had some processes where moving data from operational systems to the warehouse took nearly two weeks. That’s been cut to two days, says Alkhalaf, primarily by perfecting scrubbing routines, the processes by which redundant and superfluous data is identified and removed. Alkhalaf has also learned that there’s a direct relationship between data conversion and extraction costs and the degree to which an organization standardizes data within the operational data source systems. Accordingly, his group has established business rule tables to automatically cleanse data at the transaction level.

The kind of fine-tuning that MasterCard has done the past two years is “not as bold and exciting as what we did on the front end,” says Alkhalaf, “but it has helped us get to the core of the data and really make it useful.”

Key lesson learned? “You really have to build in flexibility,” says Alkhalaf. “Unless you believe you can guess all the technology pieces you’re going to need—and you will not be able to—you’ve got to be flexible enough to be able to continually re-examine the pieces of the technology and implement new ones without affecting the entire infrastructure. That, we’ve found, is the magic of a good, strong architecture.” **CIO**

Senior Writer David Pearson can be reached at dpearson@cio.com.

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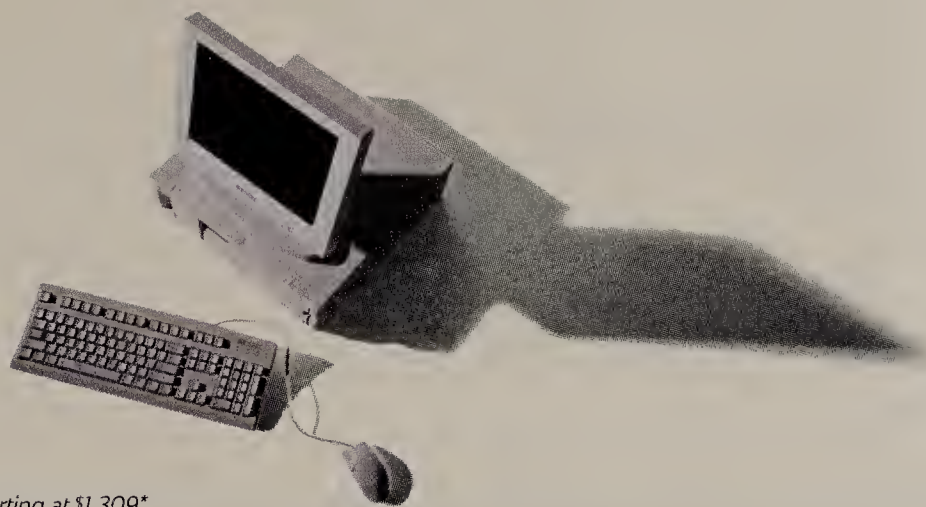


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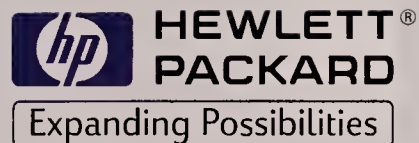


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Emerging Technology

THE STATE OF THE ART,
NEW PRODUCTS
AND STAYING AHEAD
OF THE CURVE

Edited by Howard Baldwin

English Queries Only

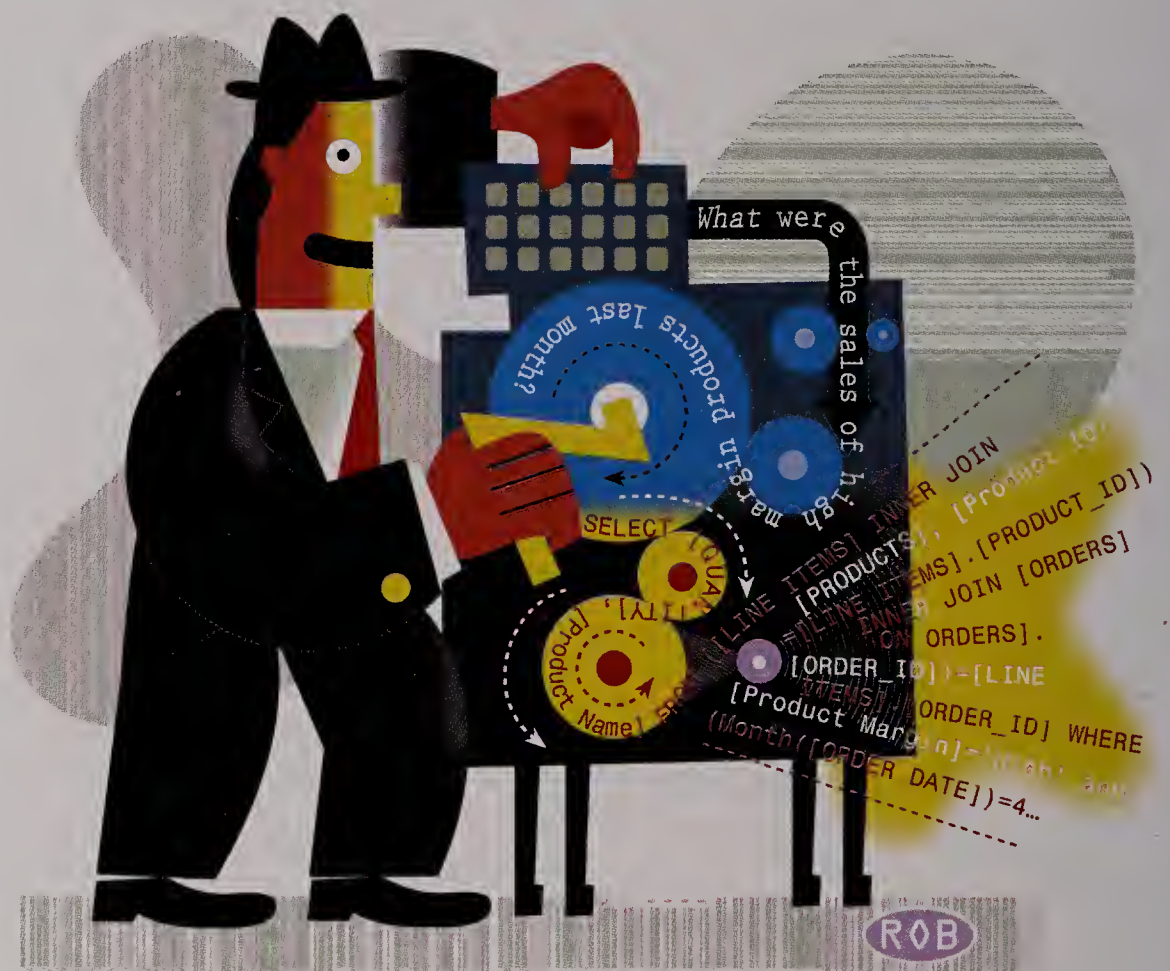
What to do when the natives don't speak SQL

BY BILL ROBERTS

THERE WAS JUST NO WAY TO WIN. DEERE & CO. WAS storing human resources information for more than 12,000 salaried U.S. employees on its mainframe, but only a handful of business users knew enough structured query language (SQL) to pose useful questions. To make data more accessible, Deere installed software that let PC users extract information by clicking on canned queries. But the more information the users got, the more they wanted—far too much to provide simply by adding additional canned queries. Deere went one step further, installing an English language query tool so that nearly 100 executives can enter just about any question they have about the staff of the heavy equipment maker's domestic operations.

"You ask a question in English, it gives you an answer," says James McGlaughlin, a systems analyst and member of the group that runs the HR database at the company's headquarters in Moline, Ill. He doesn't force people to use the product, English Wizard from

mortals can't mine because they don't speak the language, typically SQL. English language querying, also known as natural language querying, is one way to solve the problem. Competitive advantage increasingly depends on a company's ability to make better decisions faster, and the



IN THIS SECTION

Capital Ideas
Portable Unix
Better Reports
Web Calls
Measuring Uptime

Linguistic Technology Corp. in Littleton, Mass. Rather the product's use and popularity have spread by word of mouth to vice presidents, executive secretaries and even the CEO. "An executive may be in another executive's office when he sees it being used, and then he wants it," says McGlaughlin.

Corporate America's databases are rich in information that most

old method of calling the systems analyst to pose a query isn't fast enough. The new generation of point-and-click tools with preformed queries is useful, but they require extensive support and make executives thirsty for even more information. They also don't give much flexibility to the executive searching for an unexpected trend.

The Internet also drives demand for easier database access. In companies with Web-based intranets, employees have begun to expect increasing access to information of all kinds. Both of the natural language query tools on the market, English Query from Microsoft Corp. and

ILLUSTRATION BY ROB DUNLAVEY

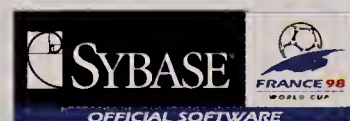


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Emerging Technology

English Wizard from Linguistic Technology, can access databases from internal or external Web sites.

"Natural language query technology is underused," observes Jackie Fenn, a vice president and research director in advanced technologies at Gartner Group Inc. She says the technology offers its greatest potential when users are highly knowledgeable about the data but don't know the query language. "Someone in a warehouse who has to be concerned with supplies—that's the kind of user ripe for this tool," Fenn says.

Consider the following two ways you might pose a relatively simple question to your database.

"What were the sales of high-margin products last month?"

Or:

```
SELECT [QUANTITY], [Product Name]
FROM ([LINE ITEMS] INNER JOIN [PRODUCTS] ON [PRODUCTS].[Product ID]=[LINE ITEMS].[PRODUCT_ID]) INNER JOIN
[ORDERS] ON [ORDERS].[ORDER_ID]=[LINE ITEMS].[ORDER_ID] WHERE [Product Margin]='High' and (Month [ORDER DATE])=4 and Year([ORDER DATE])=1998)
```

Which way would your users find easier?

New Generation Easier to Set Up

Natural language query has been around for about 20 years. Today, both Linguistic Technology and Microsoft face skepticism leftover from earlier generations of these tools, primarily a PC-based application from Natural Language Inc. (NLI), whose technology Microsoft acquired and used to build English Query. Not only was the software draining on the PC's CPU, but also the dictionary for the original NLI tool took up to 18 months to build, says Donald A. DePalma, a principal analyst at Forrester Research Inc.'s Software Strategy service. These shortcomings left a bad taste in many mouths and may account for an initial lack of interest in the new tools, analysts say.

There's good news, though. The new generation of tools requires much less setup time than the old. Executives at Linguistic Technology claim English Wizard automatically builds 90 percent of the dictionary. When first installed, the tool scans the database or data warehouse

A Card Catalog for Enterprise Information

The folks in the venture capital community spotlight trends and cope with tedium

With this issue, CIO launches a new section within Emerging Technology called "Capital Ideas." On a regular basis, we'll survey venture capitalists for their insights on what's on the horizon for CIOs. They'll reveal not only what's on their radar screens but also what's fallen off. In this inaugural column, David C. Schwab, a general partner at Sierra Ventures in Menlo Park, Calif., talks about what's attracting his attention.

What's Hot: Schwab is excited about the concept of a business information directory, which he describes as a card catalog system for information about your enterprise. "The benefit of this is that the 95 percent of people in a company who are not power OLAP [online application processing] users can get easy access to important company information," he says. Through browsers, users can navigate data that's either structured (tables and views) or unstructured (documents, spreadsheets, URLs, audio/video file formats), he explains. When they find what they are interested in, they simply click on it. "The card catalog knows what the information is, where it is and how to present it to the user. I like the idea because it feels like a missing layer in the architectural diagram of a data warehouse—that is, the information delivery layer." Schwab is looking at a company called Virtual Integration Technology (www.vit.com), whose Delivery Manager targets this area running on IBM, Sun, or Windows NT servers, Windows desktops, and Oracle, Sybase or Microsoft databases.

What's Not: Schwab gives a thumbs-down to Web development tools. As a cofounder of customer service software vendor Scopis Technology Inc. (recently purchased by Siebel Systems

Inc.), he witnessed the shift from "make" to "buy" in that application category. "The fundamental forces that drive companies to buy applica-

CAPITAL IDEAS



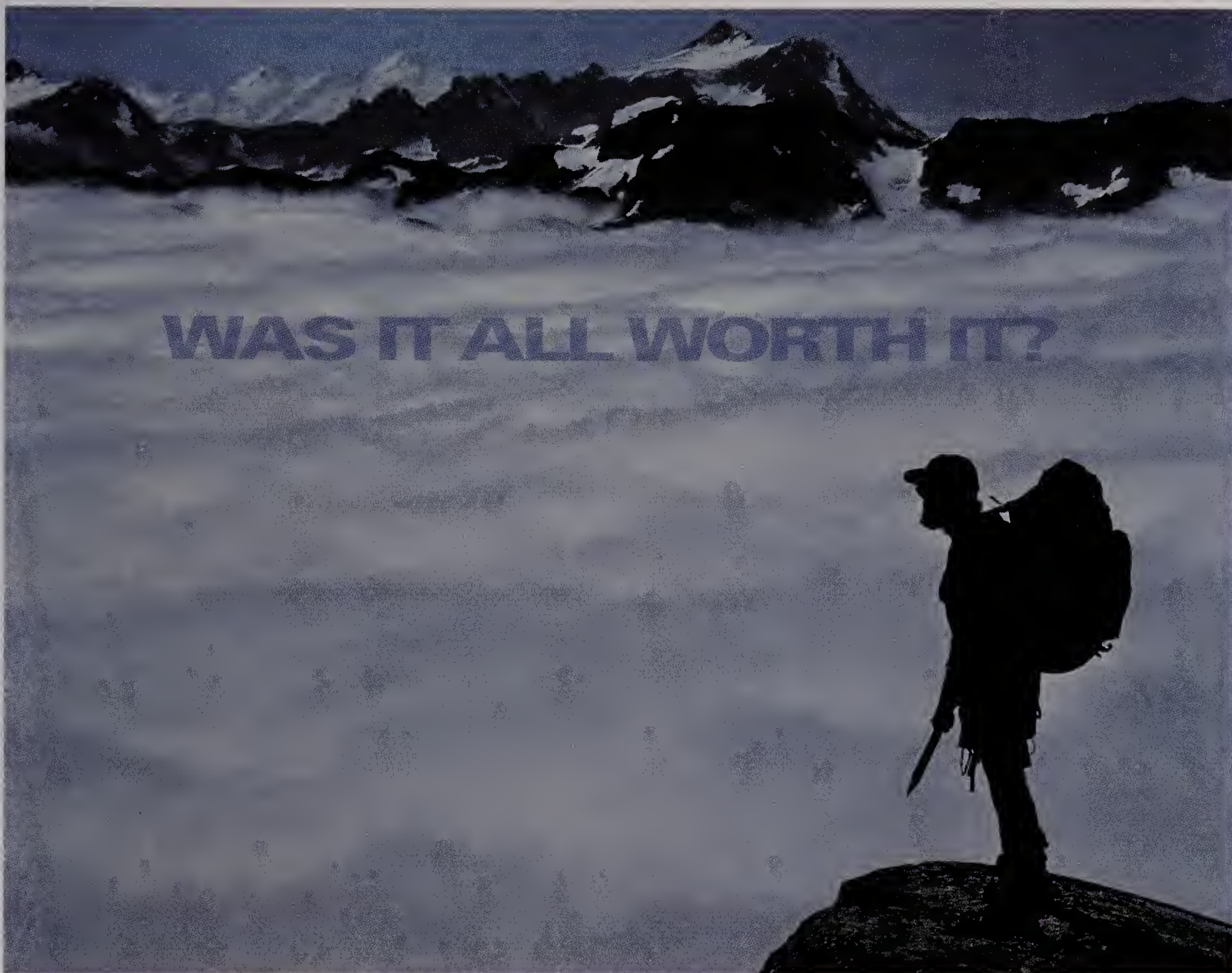
tions and not make them are still in place," he says, which means "a lot of excitement about Web tools is

being replaced with excitement about Web applications."

What's Missing: "Training is a killer app for the Web," Schwab says, lamenting that he hasn't seen many products in this area. With companies spending some \$65 billion on training in 1997, according to one account, there are niches such as sales-force training in which the Web could really add value, he says.

—Howard Baldwin

If you are a venture capitalist and you would like to participate in CIO's quarterly surveys of emerging technology, please send e-mail to hbaldwin@cio.com. You need not live in Silicon Valley.



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Emerging Technology

and maps table headings to the dictionary. Users must customize the other 10 percent by adding words and phrases to the dictionary as they come up.

Users and analysts agree that English Wizard is easy to set up. Deere's McGlaughlin says he could have set up the software in a day or so but spent more time to see how well it would work. "We only had to build the dictionary, which it pretty much does by itself. Then you enhance it over time [so that it] understands any terminology that is unique to your company."

According to experienced users, Microsoft's English Query is also vastly better than the original Natural Language product. It is in use at several companies, including Stockpoint, a San Francisco-based financial information provider, and the Environmental Protection Agency. English Query has the advantage of being completely bundled with SQL Server and other Microsoft products; it recently began shipping as a new feature in SQL Server 6.5 Enterprise Edition. Microsoft designed English Query with the Web in mind, anticipating it would be used on corporate intranets.

Microsoft executives say 60 to 70 percent of an English Query model can be set up easily and rapidly. Early adopters agree. "It's about 40 percent our effort. Better than, worse than, more than—a lot of those terms are built-in," says John Connolly, vice president of technology at Stockpoint. "What we have to add is the complexity of the relationships that we built in to our database."

Stockpoint uses SQL Server and English Query in an application that lets users find stock quotes and other information from the company's Web site. Users can ask questions as complicated as "What companies have an earnings-per-share ratio greater than 2 and a stock price between 5 and 10?"

Microsoft says English Query is better than English Wizard at determining the subtle relationships between words used in a query and the tables in the database. "During setup the database administrators use a GUI-driven process to establish all the relationships between nouns, verbs, and the tables and fields in the database," says Adam Blum, English Query's team leader and program manager.

Currently, analysts say Linguistic Technology's English Wizard is more widely used than Microsoft's English Query.

Larry Harris, a pioneer in natural language query and Linguistic Technology's founder, says, "The Internet has put many more people in front of computers with a need to get to the database. The big issues in most people's minds are setup cost and complexity."

About 6,500 companies, including Deere, American Express Co. and the Federal Reserve

LEADING

EDGE

When Unix Has to Be Portable

IF YOUR I.S. STAFFERS ARE DOING SOFTWARE development or systems management, the time may come when they need to hit the road. If their work is Unix-based, a Wintel laptop—while economically priced—just won't do. RDI Computer Corp. of Carlsbad, Calif., which has produced Sparc-based portables for the Solaris operating system since 1990, has introduced the **PrecisionBook**, a laptop that runs Hewlett-Packard Co.'s HP-UX version of Unix.

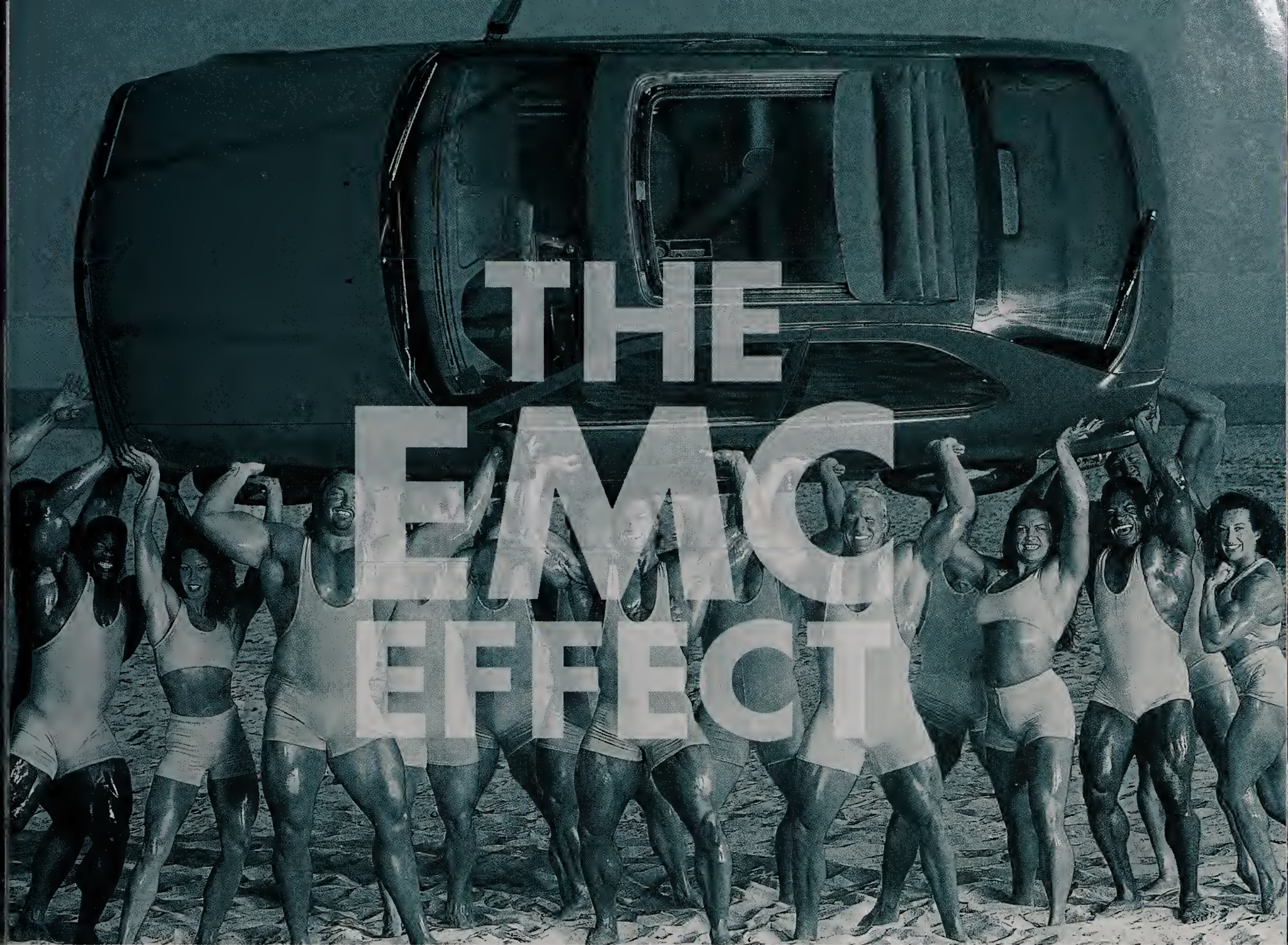
Using either a 132MHz or a 160MHz PA-RISC processor, the PrecisionBook comes with 32MB of RAM (expandable to 512MB), a 4GB hard drive (expandable to 12GB by using two drive-bay expansion slots) and an active-matrix screen supporting resolutions of 1,024 pixels by 768 pixels (either 12.1 inches or 14.1 inches). It weighs 7.5 pounds. The two expansion slots can also be used for additional battery packs, a CD-ROM or floppy drive or peripheral component interconnect cards. RDI plans to offer an expansion dock, or port replicator, by year's end. Like most Unix portables, though, the PrecisionBook doesn't come cheap. Starting prices are \$11,995 for the laptop with a 12.1-inch screen and \$14,995 for the laptop with a 14.1-inch screen. For more information, call 760 929-0992 or visit www.rdi.com.



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MANY AN EXECUTIVE HAS GONE GLASSY-EYED staring at page after page of green-and-white-striped hard copy performance reports. If only every company could abandon its antiquated reports in favor of a flashy data warehouse with data mining tools. Unfortunately that solution is often too expensive and too extreme. Now there's an alternative for companies that don't want to scrap their existing report infrastructure. Datawatch Corp. of Burlington, Mass., offers organizations a way to extend their existing reporting systems' capabilities with **Monarch/ES**. The product lets users gain many of the benefits promised by data warehouses and data mining tools without the associated costs. With Monarch/ES, users can transform static, hard copy reports into an easy-to-use spreadsheetlike format that can be queried, manipulated and analyzed.

Monarch/ES requires a Windows NT server, Windows NT or Windows 95 clients and an ODBC-2-compliant database. The product supports any network protocol and requires mass storage devices for archiving. An entry-level Monarch/ES system consisting of four concurrent users costs \$10,000; a midsize system for 10 concurrent users costs \$20,000; and a large system for 50 users is \$75,000. For more information, call 781 988-9700 or visit www.datawatch.com.



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Emerging Technology

Board, use English Wizard, according to Harris. It supports six variants of SQL: those from Sybase Inc., Oracle Corp., Microsoft Corp., IBM Corp. and Informix Software Inc., and a generic Open Database Connectivity SQL. It also works through browsers (for a demonstration, click on the Academy Awards Database link at www.englishwizard.com). Results from an English Wizard query are returned in an Excel-compatible spreadsheet format. Data updates can be obtained by opening the saved spreadsheet and executing a "refresh" command.

Many companies use English Wizard in conjunction with other query tools. At Deere, the canned queries are still available to users from an interface built with Sybase's PowerBuilder. Users with complicated queries can click a button on the same screen to access English Wizard.

People Are the Problem

Vendors, analysts and end users agree that English language query is only as good as the data it's mining, the SQL in use, the user's familiarity with the business and the information in the database.

The Federal Reserve Board in Washington, D.C., uses English Wizard to let 1,000 bank examiners access a database, says an IT staffer there who requested anonymity. He says a company should avoid English language query tools if its database has millions of different tables with inconsistent names or other obstacles. "If it's even hard to query in SQL, then you may not be able to use these tools" without first cleaning up the database, he says.

SQL itself can also be a problem, notes Aaron Zornes, an analyst at Meta Group Inc. "It's an imperfect language. You can say the same thing twice, and it will get different results."

Users, vendors and analysts agree that though little training is required, the problem with English language query tools is the users, not the software. They don't need to know SQL, but if they're not familiar with the database, its organization and the business information it contains, no tool is going to help. "The users really have to understand their data," says the Fed's IT staffer.

Deere's McGlaughlin agrees but emphasizes the upside: Users can still get quick answers. He says some of his IT colleagues at Deere fear that unknowing users will misinterpret the answers. McGlaughlin says this hasn't happened because his users are savvy businesspeople, and he warns them: "If you get an answer that makes you want to make a multimillion-dollar decision, you might want to confirm it some other way." **CIO**

Bill Roberts, a freelance writer based in Los Altos, Calif., can be reached at brobert1@ix.netcom.com.

LEADING

EDGE

One-Click Dialing

WHEN POTENTIAL customers have surfed to your Web page and found a product or service they want to buy, you don't want to take the chance of them being unable to contact you. MCI Communications Corp. has devised a way, using telephony over the Internet, to connect customers to company call centers or sales or customer service reps with the click of an icon that launches the "call" over the Internet. The service—dubbed networkMCI **Click'nConnect**—requires only one telephone line, so customers don't have to shut down their browsers to make a person-to-person call.

Users need at least a 486-based PC, a 28.8Kbps modem, a full-duplex sound card, speakers and a browser to take advantage of the service; they also have to download a free application from NetSpeak Corp. called NetSpeak Mini-Web Phone (this happens when the CnC icon is clicked on; before the download begins, the PC is checked for its hardware and software components). Companies that want to offer Click'nConnect need to have a Web site and an MCI-installed toll-free number. MCI does not have to be the user's ISP or the Web site host.

Click'nConnect has a \$300 installation fee and costs \$150 per month. The cost per call depends on volume (typically approximately \$1.75 per call). For more information, call your local MCI business sales office or visit www.mci.com.

The Data Is Empirical

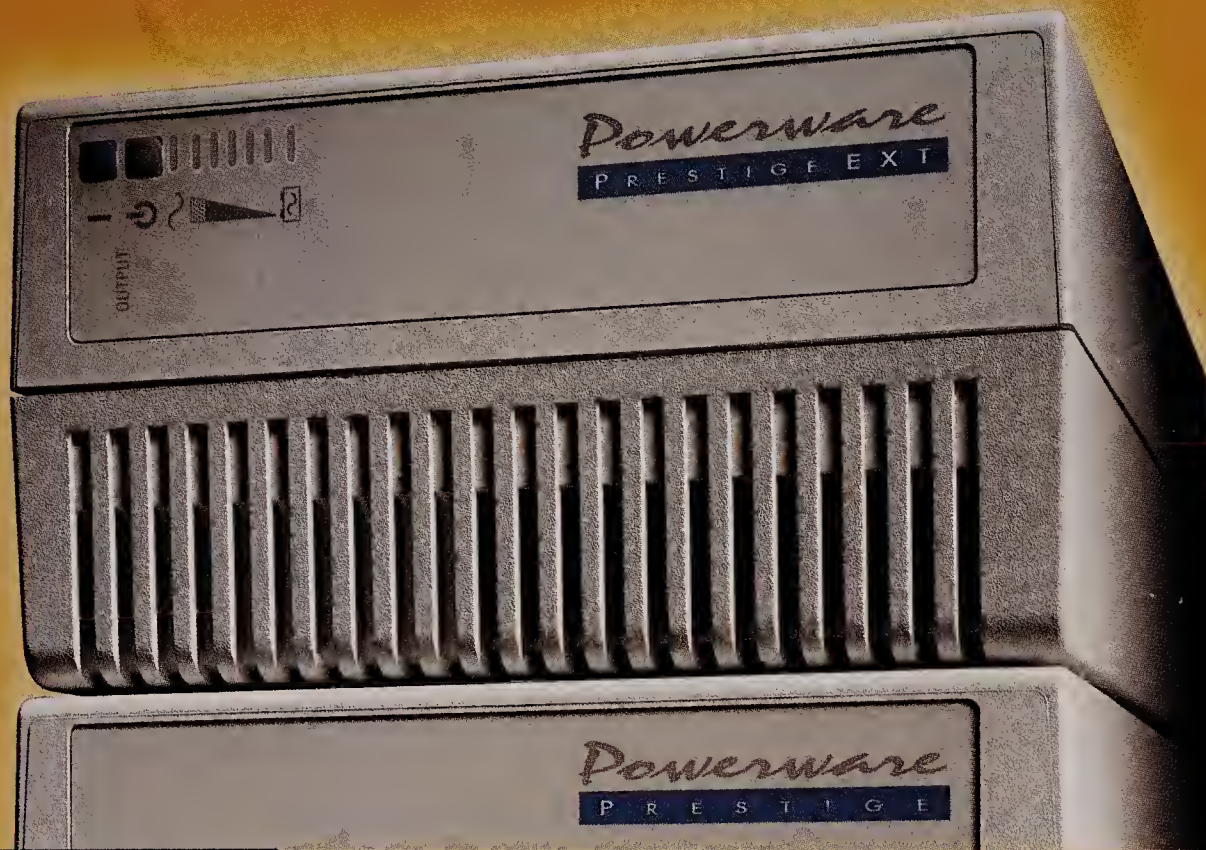
IS THERE A CHASM BETWEEN THE AMOUNT of time your users think the enterprise system should be available and the amount of time your staff is able to keep it up and running at maximum efficiency? Consider the concept of agreeing on a level of service as a benchmark by which you can measure uptime and efficiency. Empirical Software Inc. of Richmond, Va., designed its **Empirical Suite** as a way to plan, measure, predict and improve application performance.

The suite consists of three products. **Empirical Planner** offers a methodology for establishing service-level agreements, so you can align user expectations with IT's hardware and staff resources, network capacity and application availability. **Empirical Director 2.0** measures and predicts service levels; because it's newly integrated with Tivoli Systems Inc.'s TME 10 management framework, the software can send notifications either via e-mail or through the TME framework if service-level thresholds are crossed. **Empirical Controller** is designed to analyze users' databases and suggest improvements for performance tuning.

Empirical Suite starts at \$55,000 per application. For more information, call 804 794-0354 or visit www.empirical.com.

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Good Help

Help desks can cut costs and enhance productivity. Is yours meeting the mark?

BY JEFF RUMBURG

THE WHIRLWIND OF CHANGE around IT support has lifted the theory and practice of help desk management, placing it soundly at the strategic center of the business. Begun by The Verity Group Inc. in 1992, the Meta Group Inc.'s benchmarking consortium for help desks has garnered nearly 300 members from 10 countries. At that time, help desk budgets averaged 1.25 percent of corporate IT spending. Today, the figure is nearly 3 percent because help desks are shedding their lights-flashing and sirens-wailing reactive roles to become proactive about meeting users' needs. As one help desk manager says, "The best call is the call that's never placed." Rather than sim-

ply respond to user problems, the strategic help desk minimizes incoming calls by anticipating and addressing user problems before they occur. (For strategic help desk trends and case studies, see "Help on Help," Page 40.)

Help desks typically evolve through three stages as they become more strategic. The first stage—reactivity—is characterized by high abandonment rates, low customer satisfaction and rampant employee turnover because of agent burnout. In the second stage—transition—typically the help desk practices various call prevention techniques, providing users with self-help tools such as automated password resets and effective user training, and working with development

groups to ensure better design and testing of new applications. In the third and final stage—strategic—the help desk realizes its full potential as part of the IT value chain.

To gauge how well your help desk is operating and where it stands in the three stages of development, answer these questions:

- Have help desk managers created and distributed a supported product list (SPL) so that callers and agents can share an identical understanding of the help desk's boundaries of responsibility?
- Has help desk management established service-level agreements with nonhelp desk experts throughout the organization so that callers can receive seamless reference to Level 2 help?
- Do help desk managers play an active advisory role in critical IT functions such as development and purchasing?
- Do help desk agents log all calls, track the number of incidents that are escalated to Level 2 support personnel and calculate the percentage of calls that result in a technician being dispatched?
- Do help desk agents capture problem solutions in a reusable knowledge base?
- Do help desk managers use continuous, event-driven surveys to measure customer satisfaction?

Help Desk Barometer

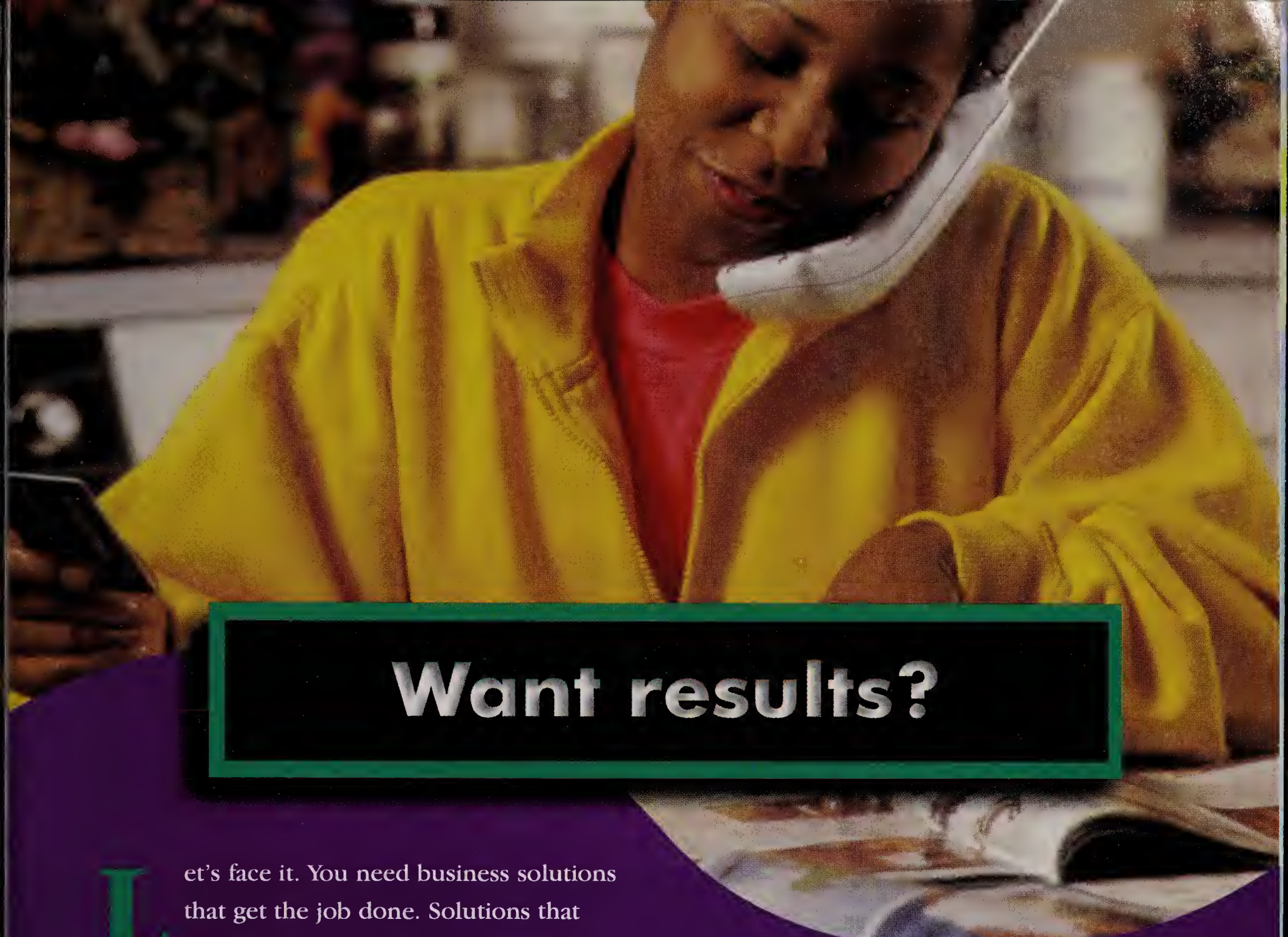
The impact of the help desk varies at each stage of its evolution

	HELP DESK METRIC		
	Reactive Stage	Transitional Stage	Strategic Stage
Cost per call	\$15-\$20	\$20-\$25	\$25-\$30
Customer satisfaction	Low to Moderate	Moderate to High	High
Call abandonment	More than 20%	10% to 20%	Less than 10%
Calls per customer per month	2 or more	1 to 2	Less than 1
First-call resolution rate	Less than 50%	50% to 70%	More than 70%

SOURCE: META GROUP CONSULTING

Though cost per call is highest at the strategic stage, the lower number of calls means a lower overall help desk budget.

- Do help desk managers post key performance indicators such as customer satisfaction, first-call resolution rate and call handle time?
- Do help desk agents have performance goals in these areas?



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Meta View

- Do help desk agents practice continuous planning in order to reduce costly call volumes?
- Do help desk personnel meet with key customer groups at least annually to explain important help desk services and offerings?

If you answered yes to eight or more questions, congratulations. You have a strategically mature help desk. Less than 20 percent of all desks fall into this category. If you answered yes to at least five but fewer than eight questions, you likely have a transitional desk. Most fall into this category, which helps explain the recent increase in help desk budgets.

Finally, if you answered yes to fewer than five questions, you are probably operating under the reactive model. Some help desks operate in this mode because of sheer resource constraints.

HELP DESKS THAT HAVE SUCCESS-fully journeyed from being reactive to being strategic generally

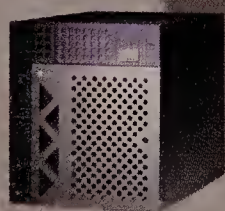
follow a similar path. Often the steps include the following:

Develop a call reduction strategy. The most common approach to call reduction is root-cause analysis, a process designed to eliminate the source of key problems. Root-cause analysis, which ought to be undertaken monthly, categorizes calls by type and technology and then discovers common causes for those calls. Next it acts to diminish the number of future calls by refining user training or the development of new online help screens. For example, one help desk found that new employees called the help desk an average of four times per month, while those who had worked at the company for a year or more averaged only one call per month. By providing a half-hour IT orientation to all new employees, the help desk reduced call volume from new users by 60 percent. But don't overlook the obvious. Another help desk reduced incoming calls by nearly 5 percent just by informing callers

how their problems had been solved. The next time users encountered the same problem, they were able to solve it without the help desk.

Free agents to work on call abatement projects. Since abatement projects are the heavy-lifting task of call desk centers, they need to be undertaken well out of earshot of ringing phones. The most common excuse for agents being unavailable for planning is that they are trapped in 911 mode. To release agents for call abatement, try to assign additional resources to staffing on the phones or else be prepared for a short-term increase in abandonment rates until the call volume can be reduced. Contractors can be particularly useful as a stopgap resource for answering telephones while regular agents focus on call reduction efforts.

Establish performance goals. Goal setting is a necessity in any project undertaken



Sun Ultra Enterprise 450
Workgroup Server



HP NetServer LXr Pro8 running
Windows NT Server

to improve help desk performance. At the very least, the help desk should have performance goals for customer satisfaction, cost per call, call abandonment rate, service-level compliance, first-call resolution rate and call handle time. (See "Help Desk Barometer," Page 76.)

Focus on customer communication. Failure to manage customer expectations may be the most common problem in the industry. Overcommunicate with users—before, during and after each call—to ensure that their expectations are properly set. Every user should have a copy of the help desk SPL. During any call, make sure users are advised where they stand in prioritization. First-come, first-served queuing can work when there is no backlog of callers, but all users throughout the enterprise should be apprised that the company's business needs are key to any incident severity ranking system and projected resolution time. Finally, when closing an incident,

agents should ask callers for some quick feedback on help desk performance.

Demand accountability and measure individual agent performance. Every help desk must operate with a sense of urgency. Individual agents must be measured against a set of performance goals

the variables typically associated with happy customers: average speed of answer, call abandonment rate and first-call resolution rate.

Becoming strategic doesn't happen overnight. In most cases, the process takes one to two years. Additionally, the cost of support often increases during

The most common excuse for agents being unavailable for planning is that they are trapped in 911 mode.

such as calls per month, customer satisfaction and first-call resolution rate. By establishing individual goals in each area, a manager can ensure that agents are both efficient and effective in delivering service.

Meet with users. Close the cycle. Internal marketing improves customer satisfaction—even without any improvement in

the transition phase. If you are prepared for this and are willing to stick with it, the rewards of being world class will more than justify any short-term increase in cost. **CIO**

Jeff Rumburg, a vice president of Meta Group Consulting, a division of Meta Group Inc., can be reached at jeff.rumburg@metagroup.com.

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Company Index

Advanced Micro Devices Inc.	20, 84
America Online Inc.	20
Andover Advanced Technologies Inc.	20
Angoss Software Corp.	50
Ariba Technologies Inc.	84
Arthur Andersen	12, 58
Autodesk Inc.	40
Bank of America	50
Bank of Montreal	50
British Telecommunications Ltd.	20
Business Objects SA	50
Cabletron Systems Inc.	20
Chase Manhattan Bank, The	40, 50
Chick-fil-A Inc.	40
Cognos Inc.	50
Compaq Computer Corp.	20
Computer People Inc.	32
DataMind Corp.	50
Datawatch Corp.	68
Deere & Co.	68
Digital Equipment Corp.	20, 40
Dow Chemical Co., The	40
EDS Corp.	20
Empirical Software Inc.	68
Entex Information Services Inc.	40
Federal Express Corp.	16
Fleet Bank	50
Forrester Research Inc.	68
Freightliner Corp.	40
Gartner Group Inc.	32, 68
Hewlett-Packard Co.	68
HNC Software Inc.	50
HyperParallel Corp.	50
IBM Corp.	20, 50, 68
Immersion Corp.	20
Inacom Corp.	32
Information Advantage Inc.	58
Information Discovery Inc.	50
Information Technology Association of America	32
Informix Software Inc.	68
Intel Corp.	20
International Data Corp.	16, 20
Jaycor	20
Levitt and Needleman PC	32
Linguistic Technology Corp.	68
MasterCard International Inc.	58
MathSoft Inc.	50
MCI Communications Corp.	68
Meta Group Inc.	40, 68, 76
Microsoft Corp.	20, 40, 68, 84
Natural Language Inc.	68
NCR Corp.	20
NEC Corp.	20
NeoVista Software Inc.	50
Netscape Communications Corp.	20
NetSpeak Corp.	68
Nippon Telegraph and Telephone Corp.	20
Oracle Corp.	20, 68
Pilot Software Inc.	50
Quadstone Ltd.	50
QueryObject Systems Corp.	50
RDI Computer Corp.	68
Remedy Corp.	40
Santa Cruz Operation Inc.	20
SAS Institute Inc.	50
Schlumberger Ltd.	58
Scientific Applications and Research Associates Inc.	20

Scopus Technology Inc.	68
Shell Services International	40
Siebel Systems Inc.	68
Sierra Ventures	68
Silicon Graphics Inc.	50
Software Artistry Inc.	40
Sprint Corp.	20
SPSS Inc.	50
SRA International Inc.	50
Stockpoint	68
Sun Microsystems Inc.	16, 20, 84
Sybase Inc.	68
Thinking Machines Corp.	50
Tivoli Systems Inc.	68
Two Crows Corp.	50
Unisys Corp.	20
Verity Group Inc., The	76
Virtual Integration Technology	68
Virtual Solutions Inc.	32
WorldCom Inc.	20
Yankee Group, The	40

Advertiser Index

*Denotes Section 2 Advertisers

3Com Corp.	17
Adante	29*
Amdahl Corp.	29
Arbor Software	63
Attachmate Corp.	21*
BMC Software	15
Business Objects Inc.	33*
Cabletron Systems Inc.	16*
Cadas Software	55*
Candle Corp.	42*, 44*, 46*
Canon USA Inc.	65
CCD Online Systems Inc.	19*
CIO Communications Inc.	75*, 79*, 81*, 82A, 83
Compaq Computer Corp.	C2*
Computer Associates Intl. Inc.	C4, C4*, 5
Compuware Corp.	24
Data General Corp.	35
Dell Computer Corp.	C2
Dow Jones & Co.	13*
Dun & Bradstreet Software	71
EDS Corp.	61*
EMC Corp.	73
Ernst & Young LLP	65*
Exabyte Corp.	15*, 70*
Exide Electronics	75
FileNet Corp.	21
Gateway 2000 Inc.	10
GTE Corp.	10*, 75*
Hewlett-Packard Co.	6, 66, 78
IBM Corp.	22*, 47
Information Builders Inc.	5*
Intel Corp.	18
JD Edwards & Co.	34*
Kingston	48
Lexmark Corp.	C3
Lockheed Martin Corp.	53*
Lucent Technologies	9*
MCI Communications Corp.	25*
MicroFocus	63*
Microsoft Corp.	2, 30, 56
NCR Corp.	42
Open Systems Management	67*
Oracle Corp.	9
PC Expo	56*
Pegasystems Inc.	77
PeopleSoft Inc.	6*
Platinum Technology Inc.	82*
Quintus	81
SAS Institute Inc.	23
Seagate Software	37
Secure Computing Corp.	27*
Sequent Computer Systems	51*
Softline	57*
Sprint Corp.	33
Sun Microsystems Inc.	27
Sybase Inc.	69
TBI	77*
Toshiba America Inc.	38
Unisys Corp.	13
Veritas Software	C3*
Wang Laboratories Inc.	73*
Xerox Corp.	31*

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CRITERIA

The CIO Magazine Enterprise Value Awards honor technology-enabled business achievement arising out of effective business/IS collaboration.

Entries will be judged on the following criteria:

- **STRATEGIC IMPACT**
- **CUSTOMER IMPACT**
- **FINANCIAL IMPACT**
- **TECHNICAL EXCELLENCE**

We invite applicants to consider the broadest possible spectrum of enterprise value. The following list of IT-enabled benefits is not inclusive but rather is intended to help guide applicants' thinking:

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- Penetration of new markets
- Transformation of the terms of competition within the market
- Increased market share

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- Customers have more choices of products and services
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FINANCIAL IMPACT

- Lower costs due to streamlined operations
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- Complexity of the problem or opportunity the system addresses

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IMPORTANT DATES

Deadline: Applications must be received by **June 15, 1998**. Notification of winners will occur in October 1998.

ENTRY GUIDELINES

1. The system must have been fully operational prior to July 1, 1996.
2. Entrants must agree to be featured, along with their systems and organizations, in a CIO article.
3. Entries must be complete.
4. Entries must be on 8.5-by-11-inch paper, one side per sheet.
5. The application form may be reproduced.
6. Up to three entries from one company will be considered, but each entry must be submitted separately. Only one entry per company can win.
7. Entries must be made jointly by the IS executive sponsor AND by the business sponsor for whom the system delivers value.
8. IT vendors, public relations and advertising companies, consultants and other third parties may NOT apply on behalf of another company. They are encouraged to forward this form to the "owner" of the system or to contact CIO Communications to recommend that an application form be sent to the client.
9. All entries must be computer generated or typed; no handwritten entries will be accepted.
10. When feasible, an additional copy of the entry should be sent on a 3.5-inch disk. Electronic entries must be limited to word-processing and spreadsheet packages that are compatible with Microsoft Word and Microsoft Excel.

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or contact Lisa Kerber at 508 935-4449 or via e-mail at kerber@cio.com.

1 COMPANY/BUSINESS UNIT

Name of parent company

City, state where headquarters are located

Publicly or privately held?

Annual revenues

Industry

Name of business unit or organization

City, state where located

Number of employees at business unit

URL

2 ENTRANTS

A. Name of entering IS executive/system sponsor

Title

Name of division, department or unit

Address

City

State Zip

() ()

Telephone Fax

E-mail

B. Name of entering business-unit executive/sponsor

Title

Name of division, department or unit

Address

City

State Zip

() ()

Telephone Fax

E-mail

3 SUPPORTERS

Please list four people who are willing to be interviewed with regard to the system, its development, its use and the value returned. At least one should be a member of the technology team that developed the system and should have played a significant role. At least one should be a primary user from the sponsoring business unit. The other two may be from either organization or may represent suppliers, customers or others intimately familiar with the system.

A. Name

Title

() ()

Telephone Fax

E-mail

Reason for inclusion

B. Name

Title

() ()

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E-mail

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4 THE NOMINATED ORGANIZATION

Please tell us about your organization (company, business unit, agency) in 500 words or less. Include information on

- When the organization was founded
- Mission statement
- Major products and services
- Markets served
- Your organization's standing within its industry
- Any other data you believe to be relevant in terms of general background

5 THE NOMINATED SYSTEM

Tell us about the nominated system and demonstrate its importance to the organization by completing the following sections. Please limit your material to one or two pages.

System Description: In one sentence or less, describe the system or IT initiative you are nominating (e.g., order-entry or sales-automation system; global intranet).

Date Deployed: Please indicate when the system was fully rolled out. If all users were not online by **July 1, 1996**, please detail what went live when.

Technical Profile: Briefly describe the technology of the nominated system, including its architecture; hardware, software and development tools used; and networking/communications hardware, software and services. Please include the names of all major vendors and products.

6 EVALUATION CRITERIA

Describe the primary business objectives of and value delivered by the IT investment. Please limit this section to five pages.

Statement of Value: List the three most important contributions the system has made to the business (these can demonstrate strategic, customer or financial impact as described in the "Defining Value" section on the first page of the application form). Please limit this answer to a few hundred words.

Strategic Impact: Define the ways in which the system has had strategic impact and describe in detail how the system delivers that impact. Make sure to include supporting data. For some examples of this, please refer to our Web site at www.cio.com/eva.

Customer Impact: Describe in detail how the system has benefited your customers. You may include examples from the organization's ultimate customers (consumers), the business users of the system, and suppliers or business partners affected by the system.

Financial Impact: Provide a detailed, one-page summary of the nominated system's investment costs (including all upfront development expenses and annual maintenance charges). Also provide details of the financial returns (including increased profits, reduced costs and indirect cost-avoidance). Please be specific about where the money is going/coming from and distinguish between actual and projected costs/returns.

This data is required to make it past the first round of judging. If your company is selected as a finalist, you will be required at that time to fill out a standardized table detailing specific costs and returns.

Technical Excellence: Describe the degree of overall technical innovation of the solution (does it employ cutting-edge technology?); its uniqueness within your industry (is this an industry first or second, or is this a common solution?); and the complexity of the problem or opportunity it addresses. Please be as specific as possible and include supporting data.

7 OTHER CONSIDERATIONS

Scope and Impact: Identify the functions (e.g., customer service, manufacturing, sales) that were changed by the system, the nature of those changes and their impact on the business.

The Importance of IT: Explain the importance of the IT component to the overall business change. Could the results have been achieved without IT?

Collaboration: Describe how the business unit and IS organization worked together throughout the project, from concept to implementation. Who initiated the effort? What were the specific tasks fulfilled by the business unit? By the IS organization?

8 TRUTH OF INFORMATION RELEASE

The following release must be signed by both nominating executives if the application is to be considered. Unsigned releases will invalidate the entry.

I hereby state that the information provided is true and complete to the best of my knowledge and belief.

I authorize the release and use of, in connection with the CIO Enterprise Value Awards program, any and all materials furnished by me or others at the company contacted for this judging. I understand that information submitted on this application or subsequently gathered during the evaluation and judging process may be used in articles or any other type of publicity relating to the CIO Enterprise Value Awards program.

I also authorize the release and use of my name, my company's name and my likeness, including but not limited to any photographs and any recording of my voice or image that may be taken of me for CIO magazine. I agree that no compensation shall be due me or my company for such usage.

I recognize that failure to meet these conditions or to provide sufficient material that can be published can cause the application to be rejected at any point in the process at the sole discretion of the sponsors.

1. Signature of nominating IS executive _____ Date _____

2. Signature of nominating business executive _____ Date _____

9 OTHER EDITORIAL OPPORTUNITIES

If you are not selected as an award recipient, are you willing to be contacted for inclusion in other articles in CIO magazine?

Yes ☐ No ☐

How did you learn about the CIO Enterprise Value Awards program?

- | | |
|--|---|
| ☐ CIO magazine | ☐ Academician |
| ☐ cio.com Web site | ☐ Advertising agency |
| ☐ Consultant | ☐ IS staff member |
| ☐ Systems integrator | ☐ Other publications |
| ☐ PR agency | ☐ Vendor |
| ☐ Other (please identify) _____ | |

CHECKLIST

Have you filled out...?

- ☐ Company/Business-Unit, Entrants and Supporters Information

Have you included on separate pages...?

- ☐ Nominated Organization
☐ Nominated System
☐ Evaluation Criteria
☐ Other Considerations

Have both entrants signed and dated...?

- ☐ Truth of Information/Release

Have you checked off...?

- ☐ Other Editorial Opportunities
☐ How you learned about the CIO Enterprise Value Awards program

Ingredients For Winning:

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TECHNICAL EXCELLENCE

COLLABORATIVE EFFORT

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A W A R D ?

Four criteria are essential...

- 1. Strategic Impact**
- 2. Customer Impact**
- 3. Financial Impact**
- 4. Technical Excellence**

If your innovative solution meets the above criteria, please complete this Enterprise Value Awards application form and return it to us no later than June 15, 1998. *CIO* magazine will feature profiles of the winning organizations and the executives who have proved the positive and sustained impact of technology on enterprise value.

In February 1999, CIO and AT&T Solutions will host a special awards ceremony honoring the CIO Enterprise Value Award winners at the annual CIO Enterprise Value Retreat.

For more information, visit our Web site at www.cio.com/eva or contact Lisa Kerber at 508 935-4449 or via e-mail at kerber@cio.com.

CIO Enterprise Value Awards

T I M E L I N E

Applications Due:
June 15, 1998

Winners Announced:
October 1998

Awards Ceremony:
Jan. 31-Feb. 3, 1999
*at the CIO Enterprise Value Retreat,
Westin La Paloma, Tucson, Arizona*

PREVIOUS WINNERS

1998

Black & Veatch
New York City Department of Finance
Procter & Gamble
State Street Global Advisors
Tech Data Corp.
U.S. Environmental Protection Agency

1997

Bell Atlantic Corp.
The Chase Manhattan Corp.
Fidelity Investments
MacGregor Medical Association
Schlumberger Ltd.

1996

Brigham & Women's Hospital
Gensym Corp.
McDonnell Douglas Helicopter Systems
Rockwell Space Systems Division (SSD)
Telogy Inc.
United HealthCare Corp.

1995

APCOA Inc.
Commonwealth of Massachusetts
PCs Compleat Inc.
Hyatt Hotels & Resorts
Caterpillar Inc.
Kmart Corp.

1994

SynOptics Communications Inc. (now Bay Networks Inc.)
Complete Health Services Inc.
Los Angeles County Department of Public Social Services
AT&T Universal Card Services Corp.
Chicago Bureau of Parking
South Florida Water Management District

1993

The Perrier Group of America Inc.
New York City Transit Authority
Medical Center of Delaware
Texas Instruments
Lone Star Gas Co.
Travelers Managed Care and Employee Benefits Operations

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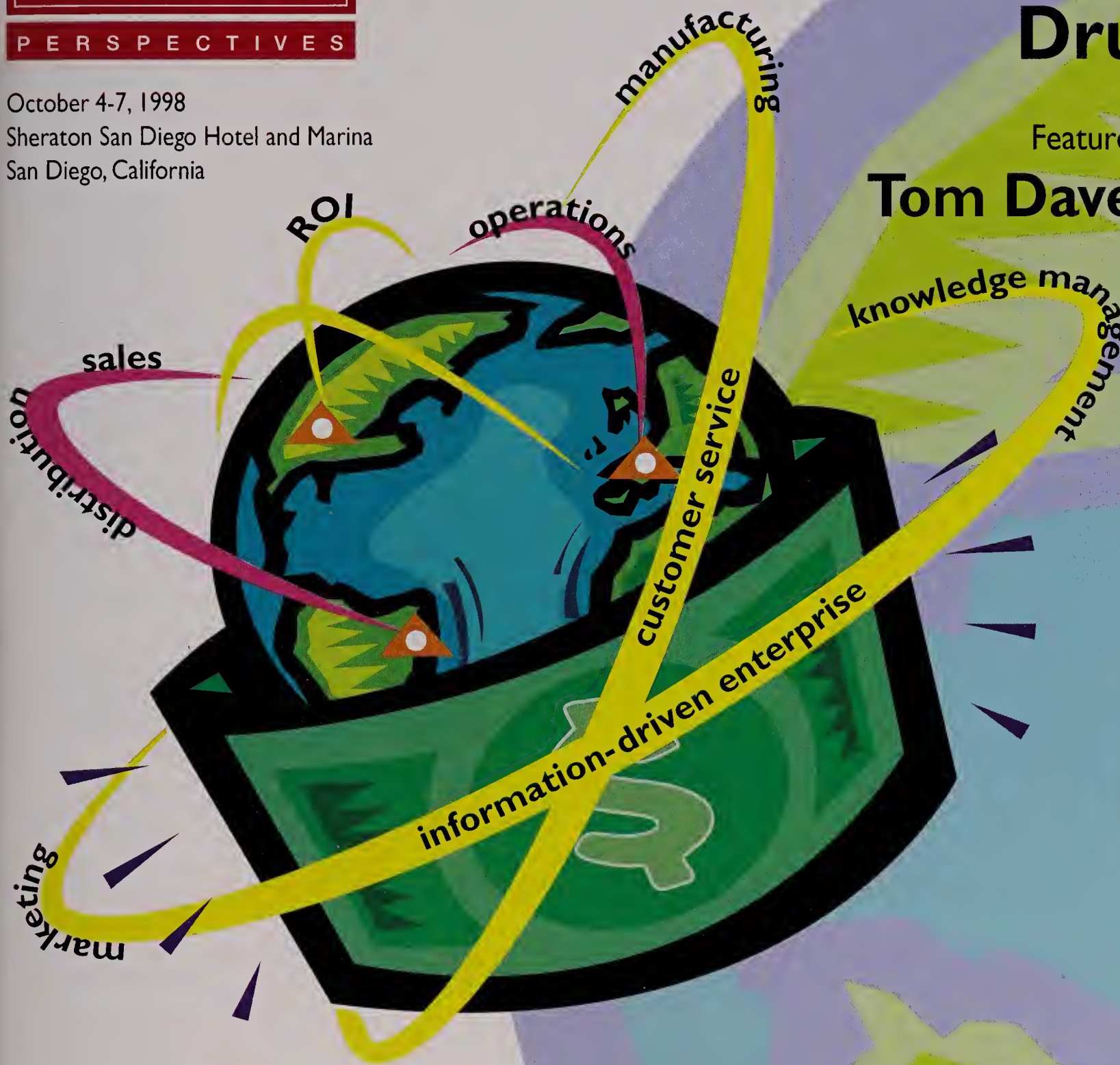
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Working Smart

MAXIMIZING THE PAYOFF FROM I.T.

PURCHASING SUPPLIES AND capital goods is one of the most critical corporate functions, yet relatively few companies have turned to automation to squeeze out the paper-pushing handoffs inherent in the process.

In 1994, integrated circuit maker Advanced Micro Devices Inc. (AMD), based in Sunnyvale, Calif., began examining its purchasing processes to determine how to improve them by reengineering its procurement model. "We had a vision of being at the leading edge of advanced procurement," says Pat Guerra, vice president of corporate supply management. "We wanted to use information technology to eliminate transaction processing." AMD investigated using the Internet to streamline purchasing. At the time, says Guerra, the company wasn't having much luck finding software that was robust enough to support AMD's idea of a "buy-side" solution. "We wanted purchasing to take place in a team-based environment where a [purchasing manager] works with key stakeholders to select the best supplier and negotiate the best terms and conditions," Guerra says.

Today, AMD is well on its way to achieving this vision with the help of Web-based enterprise software that automates the procurement process from Sunnyvale-based Ariba Technologies Inc.

Without automation, AMD's purchasing managers were bogged down with shuffling and processing paper. The purchasing process started when an employee filled out a materials request form; requests for capital goods and orders totaling more than \$5,000 went to the finance department, and requests for other items went to the appropriate manager. After having gone through any number of

Advanced Micro Devices' Web-Based Purchasing System

Vital Statistics:

- **Organization:** Advanced Micro Devices Inc., Sunnyvale, Calif.
- **Application:** Web-based purchasing system
- **Technologies:** Microsoft Corp. Windows NT server and Sun Microsystems Inc. Solaris server and workstations; enterprise operating resource management software from Ariba Technologies Inc.
- **Scope:** Initial pilot involved 65 users purchasing more than \$2 million worth of supplies
- **Sponsor:** Pat Guerra, vice president of corporate supply management
- **Objective:** Facilitate a move to supply-based purchasing
- **Payoff:** Improves productivity; reduces purchasing costs by a minimum of 3 to 5 percent

managers' in-boxes for approval signatures, the materials request form was converted into a purchase order. "The whole process was marked by handoffs and wasn't very collaborative," Guerra says. "As a result, we were forgoing a lot of opportunities to take advantage of terms and conditions from suppliers."

In early 1997, Guerra discovered Ariba's operating resource management (ORM) system, and AMD embarked on a pilot in May using the beta release of the software. The purchasing application resides on a Windows NT-based server, the ORM software is on a Sun Solaris server and an online transactional database is on a Sun Solaris workstation. Through AMD's intranet, employees fill out electronic materials request forms that are automatically routed via e-mail to all the people

required for sign-off. Prior to automation, a request form would make its way around the office for signatures over the course of weeks. With the Web-based system, request forms can be processed as quickly as an e-mail circulates around the office. When all authorizations have been obtained, the system launches a purchase order to the supplier. Users can track the status of their requisition from their desktops.

Automating the purchasing process achieves more than a reduction in delays. By spending less time processing paper, Guerra reports that AMD's purchasing pros can revamp their roles and become what he calls commodity managers. They will team up with the people who make the purchasing decisions for a group of products, like copiers or office supplies. The team will then create a supplier evaluation checklist, taking into account such factors as cost of ownership, service level and quality. "The commodity manager understands the supplier base and can then develop a partnership and negotiating strategy," Guerra says. For example, a commodity manager working with the IS department saved \$100,000 in annual costs for pagers. "The savings were a direct result of a commodity manager picking the right supplier based on previous purchase data and negotiating volume deals," Guerra adds.

Eventually, says Guerra, AMD plans to roll out Web-based purchasing to 4,000 desktops. Even with modest savings estimated at 3 to 5 percent, AMD hopes to cut millions of dollars annually from its purchasing costs.

—Megan Santosus

Send Working Smart ideas to Features Editor Megan Santosus at santosus@cio.com.



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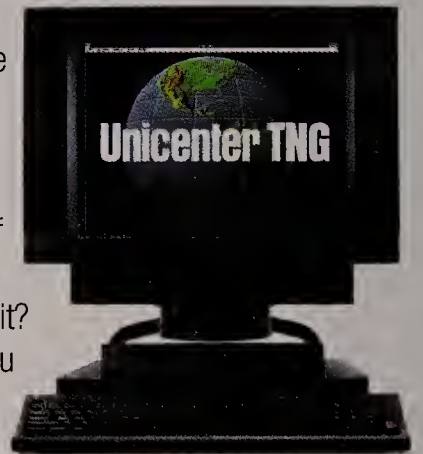
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